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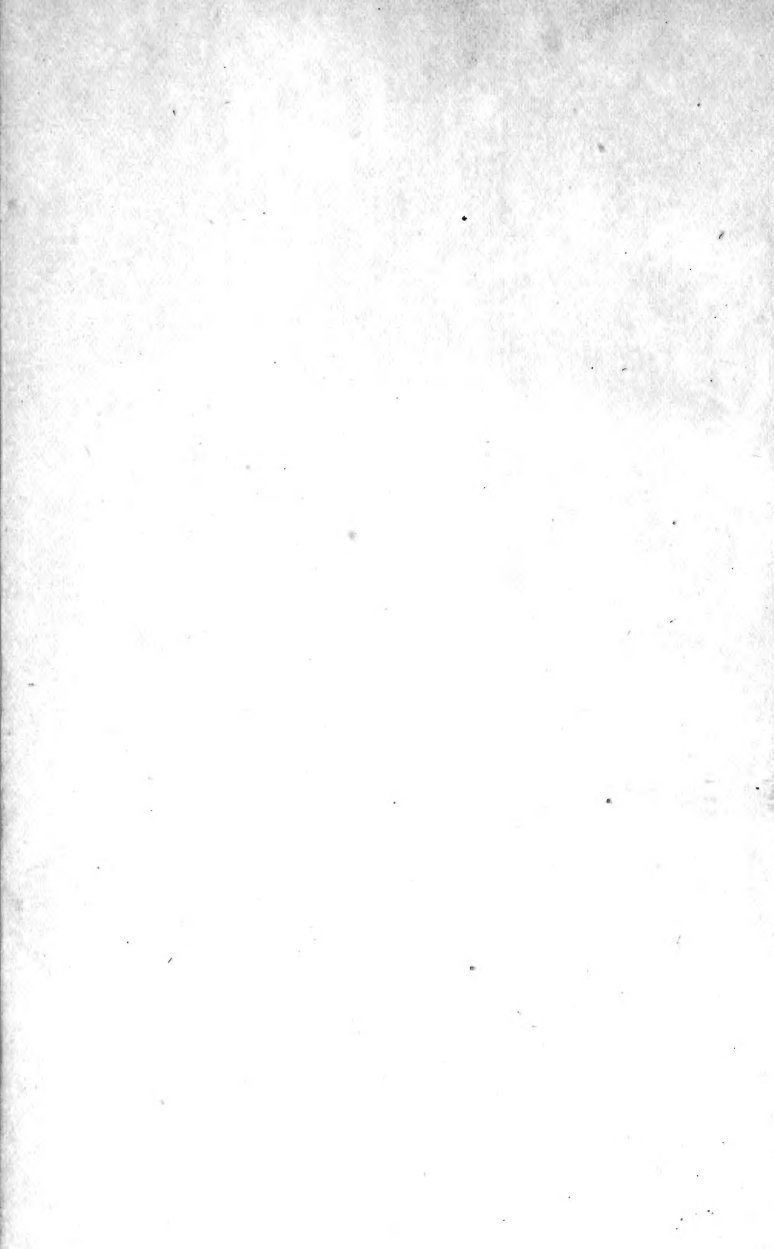
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UNITED STATES OF AMERICA.



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FRUIT CULTURE FOR THE MILLION.

A

H A N D - B O O K

OF

FRUIT CULTURE:

BEING A GUIDE TO THE

Cultivation and Management of Fruit Trees;

WITH

CONDENSED DESCRIPTIONS OF MANY OF THE BEST AND MOST POPULAR
VARIETIES IN THE UNITED STATES.

ILLUSTRATED WITH NINETY ENGRAVINGS.

WITH AN APPENDIX,

CONTAINING

A VARIETY OF USEFUL MEMORANDA ON THE SUBJECT, VALUABLE
HOUSEHOLD RECIPES, ETC.

BY THOMAS GREGG.



NEW YORK:

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P R E F A C E .

THERE are a number of valuable Fruit Books already before the public; and the question may be urged—Why present another? The answer is simply—That those works do not meet the wants of a very large class of people; or, rather, that by presenting so large an amount of purely scientific matter, they are rendered too voluminous and too costly to be brought within the reach of those who most need them.

A cheap work, in which the necessary practical details are condensed within a small compass, and divested as far as possible of all technicality, seems to be desirable.

To supply such a work was the object of the writer in undertaking the present publication. How far he has succeeded remains with the public to decide.

He lays no claim to originality. So far from it, he has drawn largely from the writings of others; and

has throughout—by careful reading and comparing and condensing—made use of the thoughts and experiences of many hundreds of practical fruit-growers.

Nurserymen and scientific pomologists will find in it little to interest them; and yet they will discover many imperfections. Let them remember, however, that it is designed for a far different class from that to which they belong.

And if it shall reach that class, and induce them to plant more trees, and teach them how to cultivate them but ever so imperfectly, his object will have been accomplished.

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PART I.

FRUIT CULTURE IN GENERAL.

Chapter One.

INTRODUCTORY REMARKS.

SOMEBODY has said that he who causes two blades of grass to grow where but one grew before, is a public benefactor. So, he who makes a tree grow where none grew before, gladdening the wayfarer with the fragrance of its blossoms and the richness of its fruit, performs an act not only of public beneficence, but of private good.

That every farmer—and, indeed, every head of a family so situated as to be able to do so—should possess a FRUIT ORCHARD, more or less extensive, is a proposition so apparent as to admit of no controversy. There are few owners of land in the country, and comparatively few in the cities and towns, but might, by the exercise of a little prudence and forethought, provide themselves with an amount of rich and wholesome fruit sufficient for their own consumption. There ought to be ten times—yea, a hundred times—as much fruit consumed in the United States as at present. What is now brought sparingly within the reach of the few, should be used plentifully by the many; instead of appearing only occasionally on the tables of the rich, it should form an important item of consumption with both rich and poor.

To aid in bringing about so desirable a result is the aim of the writer in the present publication. He makes the following points, as being eminently susceptible of demonstration:

I. THE FREE USE OF FRUIT AS A COMMON ARTICLE OF FOOD WILL GREATLY CONTRIBUTE TO THE HEALTH OF THE PEOPLE.

This fact is now very generally conceded. Physicians and other writers on Hygiene agree that ripe fruits are among the most wholesome articles of diet, and that a much larger consumption of them, to the partial exclusion of the flesh of animals, would naturally improve the general health. Many quotations might be adduced in support of this position, but a few must suffice.

Dr. KENNICOTT, horticultural editor of the *Prairie Farmer*, at Chicago, and a man of much experience and observation, says:

"The free use of ripe fruits not only *prevents disease*, but their regulated enjoyment helps to remove that which already exists. All ripe fruits are more or less nutritious. Professor Salisbury has clearly demonstrated that the apple is superior to the potato in the principles that go to increase the muscle and the *brain* of man; and in fattening properties it is nearly equal, when cooked for swine or fed raw to other domestic animals."

A writer in DOWNING'S *Horticulturist*, Sept., 1852, has the following forcible remarks:

"We believe most fully from personal experience, as well as observation, that an abundant use of fruits has a strikingly delightful and elevating influence upon the animal spirits, as well as upon the mind and soul; that the constant habit of employing fruits will cure many diseases, and have a most beneficial effect upon the individual and the race, and prove, next to air and water, the greatest of all preventive medicaments."

And he further continues:

"We do not labor merely that this princely merchant and that lordly nabob should have his table loaded with choice "specimens," but that every man, woman, and child, month in and month out, should revel in these delicious and healthful luxuries, till they become the cheapest of common necessities."

The Boston *Medical and Surgical Journal* uses the following language:

"Instead of standing in any fear of a generous consumption of ripe fruits, we regard them as positively conducive to health. The very maladies commonly assumed to have their origin in the free use of apples, peaches, cherries, melons, and wild berries, have been quite as prevalent, if not equally destructive, in seasons of scarcity.

There are so many erroneous notions entertained of the bad effects of fruit, that it is quite time a counteracting impression should be promulgated, having its foundation in common sense, and based on the common observation of the intelligent. We have no patience in reading the endless rules to be observed in this peculiar department of physical comfort. No one, we imagine, ever lived longer or freer from the paroxysms of disease, by discarding the delicious fruits of the land in which he finds a home. On the contrary, they are necessary to the preservation of health, and are therefore caused to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their grateful, renovating influences."

The *Rural Annual* for 1856 says:

"As good fruit becomes more common, and accessible to a greater number, those fevers and bilious disorders so general in new countries where fruit is scarce, will become lessened, and health and happiness increased."

Dr. TRALL, in his "Hydropathic Cook-Book," uses the following forcible language. Speaking of apples, he says:

"I can imagine no branch of agriculture, 'domestic economy,' or even 'political science,' more useful to mankind than that of raising good apples. This kind of farming would tend wonderfully to elevate the human race above its swine-eating propensities. At present a large portion of the apple crop of the world is perverted to hog-feeding and cider-making—neither animal nor liquor, when fed or made, being fit for food or drink.

"A little attention to pruning, budding, grafting, and transplanting would enable our American farmers and fruiterers to supply our markets, profitably to themselves, with an abundance of sweet, mellow, luscious apples, so rich and savory, indeed, that but little else than a piece of good bread would enable the veriest epicure to make a luxurious meal."

On the subject of the effect of fruit on health, the editor of TUCKER'S *Annual Register* has the following truthful remarks:

"FRUIT *versus* DISEASE.—In a recent conversation with an intelligent person who has made long-continued and extensive observations on climate and disease, we were assured that nothing had a more beneficial influence in preventing intermittents and the other effects of malaria than a moderate and regular use of wholesome,

well-ripened fruit. Our own limited observations abundantly confirm this opinion. This being the case, what millions in losses, to say nothing of the untold discomforts and sufferings experienced by the settlers of the Great West, might thus be prevented or mitigated! Our Western emigrants could carry no better medicine-chest with them than a box well packed with a well-selected assortment of early-bearing fruit-trees. Dwarf pears, for instance, often bear even the first year, and sometimes produce abundantly in the course of the first two or three seasons; we have known a peach-tree to yield three pecks the third summer. The smaller kinds, such as strawberries, raspberries, gooseberries, and currants, afford a quick return of very wholesome fruit. A little attention and care of this kind, in connection with a moderate share of information and intelligence, would doubtless prevent many serious losses, and avert a vast amount of positive suffering during the first few years of frontier life, when a sufficient degree of privation and inconvenience is often experienced, even with the blessing of uninterrupted health."

The apple, for instance, contains a large amount of nutrient material. It is used much more plentifully in Germany, France, and other European countries than with us. The common laborers frequently make a meal of apples, with perhaps an addition of bread alone. It is stated that the operatives in Cornwall, England, regard them as nearly as nourishing as bread, and more so than potatoes; and they have been known to assert that they could stand their work better on baked apples than with any other kind of diet, without meat. In our own country, those who make a free use of apples and other fruits for food are seldom troubled with dyspepsia, or any form of indigestion.

II. FRUIT IS A CHEAP ARTICLE OF FOOD.

Apples, peaches, pears, plums, cherries, and even strawberries, and many other small fruits, can be produced as cheaply as wheat or pork, corn or potatoes. A well-set orchard of healthy trees, eight to ten years old, will produce, at a moderate estimate, from one hundred to three hundred bushels per acre. These, at twenty-five cents per bushel, at which price they can be afforded as food even for stock, will yield a very fair income—much more than can be ordinarily obtained on large farms at other branches of farming. THOMAS, in his *Fruit Culturist*, says: "Good winter apples always

command a market. * * * The farmer, then, who sets out twenty acres of good apple orchard, and takes care of it, may expect, at no remote period, a yearly return of five to fifteen hundred dollars a year."

DOWNING, referring to strawberries, says "they are so easily grown that the poorest owner of a few feet of ground may have them in abundance;" and BARRY says "any one who can manage a crop of corn or potatoes, can, if he will, grow strawberries."

Other varieties, both of orchard and garden fruits, it is well known, are about as easily and cheaply grown as apples and strawberries.

III. THE CULTURE OF GOOD FRUITS IS PROFITABLE.

It may well be doubted whether any branch of agricultural production pays better than the growing of good fruit for the market—especially where a market is attainable; and, since railroads are beginning to traverse all portions of our widely-extended country, few localities are found to be beyond the reach of a market. Twenty-five or thirty years ago, as at the present day, men were everywhere found prophesying that in a few years more the markets would be glutted, and the orchards then planting would be useless. Yet the prices of the best kinds of fruit have ever since been steadily advancing; and we hazard nothing in saying that they will advance, or that, at least, the present fair prices will be maintained for twenty-five, or even fifty years to come. It should be borne in mind that there will be a continued very large increase in the population of our towns and cities, who are necessarily non-producers of fruit; and further, that the amount of consumption will probably before many years quadruple that of the ratio of increase of population. In numberless instances the profits have been enormous; and while these are to be regarded as only occasional cases, and exceptions to the general rule, yet, in all instances where the business has been properly conducted, and markets not too remote, the profits have been exceedingly large. No surer source of income, it may be safely urged, and at highly remunerating prices, can be found, than that of a fruit orchard, consisting of a proper assortment of the best varieties of fruit.

Even in localities beyond the reach of market, structures for drying can be reared at comparatively small expense, which will

render the business of drying for market a fair one. Eastward, and that, too, where a market for fresh fruits is readily attainable, these drying establishments are becoming common. The demand for dried fruits will become greater every year.

Large sums of money are expended abroad annually for fruits which might easily be produced at home in much better perfection and at far cheaper cost—such as grapes, figs, currants, etc. Even fresh pears have been imported from France by the New York confectioners.

In addition to our home market, a large foreign market will doubtless spring up. American apples and pears have already been sold in Europe and the East Indies, in a fresh state; and peaches and strawberries have been sent to the West Indies.

It is fair, then, to assume that, as the facilities for quick transportation increase, and as the various processes for preserving fruits in a fresh state become perfected, not only all sections of our widely-extended country, but the markets of the whole world, will be opened to our fruit-growers!

But suppose both home and foreign markets fail us, it furnishes no valid reason why every farmer should not plant and cultivate enough to supply his own wants luxuriously, and every mechanic and other head of family have his well-stocked fruit-garden. Of the millions of these farmers throughout the country, there are not half even in the old States, and not one tenth of them in the new, who produce enough for their own consumption! This home supply should at least be furnished, let the markets be as they may.

IV. FRUIT FURNISHES AN AMOUNT OF GOOD LIVING NOT OTHERWISE ATTAINABLE.

Those who have not been able to realize this fact from actual experience, will be astonished to know what a vast amount of good, and even luxuriant food, the orchard and fruit-garden can be made to yield with the proper care and management. It will not be too much to say, that a good selection of fruits in the market, worth any given sum, can be made the source of more real comfort and substantial enjoyment than twice the market value of any other kinds of food. This is owing mainly to the various modes of cookery, and the great variety of ways in which they can be served up.

V. THERE IS ECONOMY IN THE USE OF FRUIT.

On this point we can not do better than to copy entire the following paragraphs, which we find in a horticultural journal without credit:

“Every man of family, who keeps a good supply of stewing and baking apples, of his own raising, saves a great many hard-earned dollars yearly, otherwise to be paid to the miller or butcher. Or, if he raises his own grain and meat, an equal amount is thus reserved for market. Then what a valuable addition to the comfort, variety, and luxury of the table! By the first of summer the thick tresses of strawberries begin to redden in the sun; and half a dozen quarts of this melting crimson fruit may be had each day for the table, from as many half-rod beds. Cherries, currants, and raspberries continue through the first half of summer, followed by early juicy apples, rich bloom-dusted plums, golden-hued apricots, and buttery and melting pears.

“Now, we do not say, as some mistakingly remark, that this fine and delicious supply costs nothing after the trees are planted; for good fruit can not be expected unless the ground is well cultivated and manured. But it does not cost half as much to cultivate an acre of fruit as an acre of potatoes or corn; while the amount obtained is greater than either, and all ready for the table without going through the process which the grain crop requires, of threshing and winnowing, and grinding, and kneading and baking.

“By planting rich, highly-flavored apples for stewing and for pies, instead of poor ones, each family may save from fifty to two hundred pounds of sugar annually, in sweetening and in spices. A friend of ours finds it cheaper to buy good fall pippins for fifty cents a bushel, than poor sorts, sold as ‘cooking apples,’ for fifteen cents a bushel. He uses the Talman Sweeting largely for baking and for puddings, and thinks that an Indian apple-pudding, made by this natural sweetening, the cheapest and the best pudding in the world. He saves from \$75 to \$100 annually in the cost of his table by this fruit.”

In reference to the economic influences growing out of the Fruit Culture, Mr. THOMAS, in his excellent work, has the following highly instructive paragraph:

“It is not, however, merely as a source of income, that the cultivation of the finer kinds becomes profitable. The family which

is at all times supplied with delicious and refreshing fruit from its own gardens, has within its reach not only a very important means of economy, but of real domestic comfort. An influence is thus introduced of an exalted character; a tendency is directly exerted toward the improvement of the manners of the people. Every addition to the attractions of home has a salutary bearing on a rising family of children. The difference between a dwelling with well-planted grounds, and well furnished with every rural enjoyment, and another where scarcely a single fruit-tree softens the face of bleakness and desolation, may, in some instances, and to many a young man just approaching active life, serve as the guiding influence between a useful life on the one hand, or a roving and unprofitable one on the other—between a life of virtue and refinement from early and favorable influences, or one of dissipation and ruin from the overbalancing effects of a repulsive home. Nor can any man, even in the noon or approaching evening of life, fail to enjoy a higher happiness, with at least an occasional intercourse with the blossoming and loaded trees which his own hand has planted and pruned, than in the noise of the crowd and tumult of the busy world."

We conclude this introductory chapter, then, with the repetition of this urgent advice, to all who may see these pages—to plant trees! —PLANT TREES! without further delay, and cultivate them properly and carefully, and our word for it—and not our word alone, but the united testimony of thousands of those who have demonstrated the fact—they will be to you at no very distant day a source of pecuniary profit and rich enjoyment.

Chapter Two.

PRELIMINARIES TO PLANTING.



ASSUMING, dear reader, that you have already decided to plant an orchard, the next thing to do is to fix upon its extent. In the consideration of this question of extent, two other important matters are to be taken into account—these are, the quantity of ground you may have suitable and to spare, and the amount of means you can set apart for the purpose. In settling these points you should possess, first, a knowledge of the kind of ground necessary; and second, a determination to do the work well, at whatever cost.

For an ordinary family of five to ten persons, not less than three acres will suffice for home consumption alone—and as many more as can be made profitable for market use. On these three acres can be stocked from two to three hundred standard trees of the different sorts of fruit, besides a due proportion of all the smaller kinds—an amount which, if properly managed, will in a few years afford an ample supply for family use.

COST.

The cost of first planting will vary widely in different localities—depending on the condition of the ground, the quality of the soil, prices of trees, price of labor, etc. An approximate calculation may be made, however, by estimating the cost of preparing the ground and planting the trees, at an amount equal to the cost of the trees in the nursery; and when ditching and underdraining is necessary, at double that amount. The following rule should be inflexibly observed in all cases: *Never slight the work, nor plant an inferior tree, because it is cheaper to do so!* Work half done is very poor economy in planting an orchard, as well as in most other things; and a tree costing only half price in the nursery, may turn

out to be a very dear one in the end. The very best varieties (and these are not always the most costly), as well as the very best trees, are those from which you must expect to realize the most profit.

ESTIMATE FOR THREE ACRES.

The following estimate will answer for an orchard of three acres of ground, with such variations as circumstances may require. [The number of trees will vary somewhat as the shape of the ground is varied; the calculation is based on a plat twenty-four rods long by twenty wide.]

Eighty apple-trees, thirty-three feet apart, covering two acres.

Seventy peach-trees, sixteen and a half feet apart, set around three sides of the whole.

There will then be left in front one acre, which may be divided into two equal plats of 132 by 166 feet. These may be filled as follows:

IN No. 1.—Twenty standard pears, thirty-three feet apart, in continuation of the apple rows.

Thirty-two dwarf pears, in the same rows, seven feet apart, and thirteen feet from the standards. And—

Twenty-seven pyramid and dwarf plums, quinces, cherries, etc., in the alternate rows, sixteen and a half feet apart.

IN No. 2.—Such number of almonds, apricots, grapes, nectarines, gooseberries, currants, raspberries, blackberries, and strawberries, as fancy may dictate, and will stock it properly.

The above estimate will constitute an orchard of about 250 orchard trees—standard and dwarf—and perhaps as many more of the garden or bush fruits.

DISTANCES.

Every planter has his own opinion regarding the distance which trees should be planted from each other. Besides, some kinds of soils and localities require greater distance than others; and some varieties will bear to stand closer than other varieties of the same fruit. A good rule is that, when full grown, the tops should not be nearer to each other than one third their diameter. An apple-tree, for example, when fully grown, will spread, on an average, to a distance of twenty-five feet; the rule will give thirty-three feet as the proper distance apart. Peaches seldom spread, or should not, if properly pruned, more than twelve to fifteen feet; the rule gives

sixteen to twenty feet as the distance to plant. In planting an orchard of apples, with plenty of ground, thirty-three feet is probably the safest distance; yet, if ground is an object, they will do at twenty-five feet. Apples may be planted a little wider—say forty feet—and rows of peach-trees planted both ways between; as the peach, not being so long lived, will die out before the apple has attained to a large growth.

When the saving of ground is an important consideration, and none but standard trees are to be planted, more space may be obtained by planting in rows, according to the following diagram:



Smaller trees may be set closely in rows, as represented in the figure below:



This last method is recommended for village plats, where it is desirable to combine the raising of vegetables with that of fruit; as the spaces between the rows may be appropriated to any kind of root crop, with decided advantage to the trees.

The following table of distances for the various kinds of fruit, condensed from THOMAS' *Fruit Culturist*, seems to have been acquiesced in by most fruit-growers:

APPLES.—For large trees	25 to 40 feet.
For pyramids and dwarfs.....	6 to 8 “
PEARS.—Large trees on pear stocks.....	20 “
Pyramids on “ “	8 to 10 “
Pyramids on quince “	6 “
Dwarf standards on quince.....	8 “
PEACHES.—Full growth.....	20 “
Shortened in.....	12 to 15 “
CHERRIES.—Common standards.....	20 “
Pyramids on common stocks.....	10 “
(Dukes and Morellos require less).	
PLUMS.—Standards	15 “
Pyramids	6 to 8 “

APRICOTS.....	15 to 20 feet.
QUINCES.....	6 to 8 "
GRAPES.—On 8-foot trellis.....	25 "
On 12 " "	16 "
Trimmed to stakes.....	4 to 6 "
GOOSEBERRIES AND CURRANTS.....	4 to 5 "
RASPBERRIES AND BLACKBERRIES.....	4 "

For the above distances, the following is the number of trees required for an acre :

40 feet apart.....	27 trees.	12 feet apart.....	302 trees.
33 " "	40 "	10 " "	435 "
25 " "	69 "	8 " "	680 "
20 " "	108 "	6 " "	1,208 "
15 " "	193 "	4 " "	2,720 "

LOCATION.

Much has been said and written concerning the location of orchards. Situation and aspect doubtless have their effects; yet no one should neglect to plant merely because he can not give his trees such an aspect as he may desire. Trees in favorable situations will undoubtedly produce more good crops than those less fortunately situated; yet many seasons occur when the causes of the difference do not arise, and trees in any exposure will produce abundantly. To this general rule there can be very few exceptions, namely—*Elevated situations are better than lowlands, and the brows and sides of hills are to be chosen in preference to the valleys.* Numerous proofs have been adduced to show that the peach might be successfully grown much farther north than it usually is, if the most elevated positions were chosen instead of the warm valleys. So, farther south, frequent severe frosts cut off the crops on the low grounds, while those on the more elevated and exposed situations are not affected.

The old rule was to choose a southern or southeastern exposure. COXE, whose work was issued about 1820, and who planted a large number of trees from 1794 to 1810, in different exposures and aspects, says: "A southeast aspect, which admits the influence of the early morning sun, and is protected from the pernicious effects of northerly winds, will be found to be the best site for an orchard." This is at variance with most later authorities, and with the expe-

rience of practical fruit-growers at the present day. A northern exposure is now very generally preferred. This is because the action of the warm sun, in a southern exposure, will too soon thaw away the frost about the roots, and occasion the buds to swell—leaving them exposed to alternations of frost and thaw. In the West, the rolling prairies near the woodland, the hazel ruffs that skirt the prairie and wood, and the richest portions of the timbered bluffs or highlands that overlook the rivers, are regarded as the best locations. The best bearing orchards within the knowledge of the writer are those on the bluff overlooking the Mississippi at the Lower Rapids.

SOIL.

Fruit trees, like corn and cabbages, will grow on almost any kind of soil; yet some soils are more suited to their natures than others. They require a soil strong enough to give the tree a vigorous growth, and the better and more vigorous the growth of the tree, the better will be the character of the fruit. As a general thing, any soil that will produce a good crop of corn will be good for fruit-trees. A strictly alluvial soil, however, is not to be recommended; as, while it will produce a rank growth of wood, it will not make so hardy or fruitful a tree; nor will the quality of the fruit be equal to that grown on a less fertile soil. A calcareous soil is the best adapted to most kinds of fruit; yet in other than limestone regions a gravelly or sandy loam will be found to answer a good purpose. Stiff, clayey soils are not promotive of a good growth; yet they can be rendered available by a proper incorporation of sand, manure, and vegetable mold. Most soils—even those in the limestone region—require an addition of more or less lime and potash, as these ingredients enter largely into the composition of most fruits.

PREPARATION OF THE GROUND.

Not one in a hundred of those who plant trees bestows the necessary care and attention to the preparation of the ground. A very common mode is to dig a hole about a foot wide and five or six inches deep, stick in the tree, bending the roots or cutting them off to bring them within the proper compass—shovel in a few spadefuls of dirt or sod, tread it down with the foot, and the job is done! If the tree grows, well; if not, the planter has only been *unlucky*, and all the neighbors conclude not to plant, *it is so hard*

to make trees grow! Is it any wonder that three out of every four trees taken from the nursery die without having reached the stage of fruit-bearing?

In the first place, the soil must be dry before planting. If not so naturally, it must be made so by deep plowing, and, if this will not suffice, then by underdraining. A clay subsoil should be underdrained to the depth of three feet; but any soil not very retentive of water may be sufficiently drained by the use of a subsoil plow and a strong team. With good underdraining and a proper admixture of manures, ashes, sand, and loam, the toughest clay soils may be reduced to a proper condition for fruit trees. If from any cause it may be inconvenient to break the whole surface of the orchard, it may answer a good purpose to plow a space of eight to ten feet wide, at proper distances for the rows. Then dig large holes to the depth of two feet, and five or six feet in diameter; these should be partly filled with a well-pulverized and richly-manured soil, and the tree planted therein. Previous to planting, the soil should be enriched with well-rotted barn-yard or good chip manure, thoroughly intermixed and pulverized by the harrow. If planting is to be done in the spring, the plowing should have been gone through with the fall previous, and then thoroughly stirred again just before planting. Some advise the digging of holes merely, without any previous preparation of the ground with the plow. In extreme cases this may answer, if thoroughly done, but should be avoided. When the whole field is thoroughly prepared by the plow, it can be cultivated to some useful crop, and the trees will be more likely to receive the necessary tillage than they would if standing in the field alone. It will furthermore be found that the cost of preparing the whole by means of the plow will not be much, if any, greater than attending the making of the holes only in the hard soil. After the ground is prepared by means of the plow and harrow, the holes for the trees may be dug only sufficiently large to admit the tree to a proper depth, and the necessary covering for the roots.

MANURING.

It should be remembered by every planter that a tree can no more live and thrive without food than a man or a horse. Though fresh and unexhausted soils may for a time furnish a sufficient portion of life-giving substances to keep it alive and even thrifty, yet

there are few orchards that are able to dispense with artificial fertilizing from the first. The soil may be rich, yet may not possess a proper proportion of those particular ingredients which enter most largely into the composition of fruits and fruit-bearing trees. The most important of these are lime, potash, and phosphate of lime. A liberal use of barn-yard manure will furnish these ingredients in certain quantities, but an addition of lime, slaked ashes, and bone-dust is highly advantageous.

It is in after-culture that the application of other manures becomes necessary to the production and perfection of fine fruit. Frequent applications of fertilizers must not be neglected; and no one ought to plant an orchard who has not previously formed a resolution to feed and cultivate it well, and who has not the perseverance and energy to carry his resolution into effect. The fertilizers mentioned above will be generally useful to all orchards; yet, as different fruits require different treatment, other ingredients will sometimes be necessary. These will be mentioned in the proper places.

Chapter Three.

TRANSPLANTING.

LAYING OFF THE GROUND.



THE best way to lay off the ground, after it has been fully prepared and the distances decided upon, is to measure along the sides and ends, setting a stake at the proper distances, and then driving small stakes, say one foot high, at all the points where the lines thus indicated intersect each other. After the ground is staked, commence digging the holes—and this should be completed before the trees are removed from the nursery.

SEASON FOR TRANSPLANTING.

The proper season for transplanting a tree is any time between the falling of the leaf in autumn and the swelling of the buds in spring; and, in the case of a hardy tree, as the apple, it probably makes but little difference whether it be done before the winter or after it. With other trees it is different; the less hardy ones, with diminished strength, can not so easily withstand the severe frosts and piercing nor'westers of that season. Hence they should be transplanted only in the spring. Apples may be removed either in November or April, provided it be done well, with probably about equal success. COXE, who did a great deal of orchard planting in his time, always planted in the autumn, generally about the middle of November—sometimes, however, as early as October, and sometimes as late as December. THOMAS, in his *Fruit Culturist*, says: "Where the work is well done, both are successful." The editor of the *Illustrated Annual Register*, 1855, says that planting should be done at that season when it can be best done; and adds—"after all, the subsequent treatment of trees has more to do with their success, at least twenty fold, than the season of the year for setting."

TAKING FROM THE NURSERY.

Trees should be injured as little as possible in removing them from the nursery. Taking them from the row, and tying in such a manner as to be easily transported, is properly the nurseryman's business; yet it is always best to keep a watchful eye to the work. Especial care should be taken that the roots are not broken or bruised, or cut away by the spade in taking them from the ground; and when any of the roots do become injured, they should be nicely cut off with a sharp knife. As soon as dug, the trees should be carefully arranged in convenient bunches, as much damp earth as possible placed about their roots, and then closely enveloped in some coarse sacking, or other suitable thing, and firmly tied with strong cord. If they are to be re-set at but a short distance from the nursery, these precautions are unnecessary, though if they are to be carried any considerable distance, too much care can not be used in this respect. In all cases the roots should be carefully secured against exposure to the air and sun.

If from any cause the trees are not to be immediately planted, they should be placed in the ground, root and stock, by digging a trench and shoveling loose dirt upon them, to a depth sufficient to exclude the air. The weather will not always permit of immediate re-planting, but it should in no case be delayed longer than is absolutely necessary. This covering should be done in orchard or garden, and the trees should be removed from the trench one by one as they are planted.

SELECTION OF TREES.

There is a great diversity of opinion in regard to the proper size of a tree for transplanting. Some will plant only a very large tree, and the older the better; others choose two-year-olds, of not over five feet in height. The middle course is here undoubtedly the correct one. In thrifty, well-tilled nurseries, trees of three years old will be found the most suitable for transplanting. Their height will usually be six to eight feet; in less thrifty nurseries, from five to six feet. At the age of three years a tree may be considered as in a better condition to sustain the violence done to its nature by transplanting, and better able to recover from it than at any other period. Care should be taken to select trees of as near the same size, vigor, and general condition as possible.

SETTING OUT TREES.

It requires three men, or two men and a boy, to set out trees as it should be done. Before inserting the roots into the hole prepared to receive them, they should first be dipped into mud made of the rich surface mold, to cause the earth to adhere to all their parts. This done, place the tree in its proper position in the hole, shovel in a small quantity of the finely pulverized mold, and then give it a gentle shaking suddenly up and down, in order to settle the dirt closely about the roots. One person to hold the tree to its proper position, while another shovels in the earth. When a sufficient quantity of the earth has been placed upon the roots to bring it level with the surface of the ground, tread it down gently with the foot, and then add more, rounding it to a slight mound, with the stem of the tree for a center. The tree should be placed in the hole so as to allow it to stand about as deep, when the earth becomes settled around it, as it stood in the nursery.

It is recommended by some to plant the tree in the orchard in the same relative position to the points of the compass that it occupied in the nursery. This may or may not be beneficial; at any rate, it can do no harm, and it is quite an easy matter to mark the tree before it is lifted, so as to indicate its position.

If the planting be done in autumn, there should be a mound of earth ten inches to a foot high, and three feet in diameter, raised around the tree to steady it, and protect its roots from frost and the bark from mice. When the ground becomes well settled in the spring, the mound should be removed.

TRIMMING.

Before setting out, each tree should undergo a proper degree of trimming. This requires considerable judgment. As the branches and roots of a tree depend upon each other for support, it will readily be understood that neither should be overtaken. In removing it from the nursery, all the small fibrous roots, and sometimes many of the larger, are lost; hence the top must be trimmed to correspond. To do this properly, all the leading shoots should be shortened back one half or two thirds of the current year's growth; and, if the roots have been much injured, the leading branches should be headed back still more.

Chapter Four.

AFTER-CULTURE.

PLOWING AND HOEING.



NE of the most common errors among the people in regard to fruit-growing is that pertaining to after-culture. Many suppose that all that is necessary to get good fruit, is to set the tree in the ground, right end downward, to be sure, and nature will do the rest. This is a most fatal error—nothing can be more unreasonable. It is as absolutely necessary

that the tree which you have planted should receive culture and care afterward, as that the corn which rustles in the breeze should be plowed and hoed and harrowed to make it yield its golden harvest. Trees, as well as vegetables, must have food and drink. It is by culture that they obtain them.

Hence, in the orchard, the growing of some crop is very desirable. Roots are perhaps the best of all. Potatoes, beets, beans, carrots, parsneps, onions—all require thorough culture, and do not shade the trees; while Indian corn, clover, grass, and all the cereal grains, should be rigidly excluded.

PRUNING.

In the matter of pruning we find there is a great diversity of opinion among experienced fruit-growers. Some advise a free use of the knife; others prune but little, or none at all. The first are doubtless right, as regards some sorts of trees; while in regard to other varieties, the second class are correct. And the point must be settled between them by considering the objects sought to be attained by pruning.

To our mind there are four objects to be had in view in pruning a fruit-tree. These are—

1. To relieve it of its dead and decaying branches.
2. To promote the growth of the tree.
3. To encourage the production and increase the size and quality of the fruit.
4. To change its shape.

Now, the above being ALL the objects for which a tree ought to be pruned (except as heretofore stated, under the head of "Trimming," to preserve an equilibrium between roots and branches in transplanting), it is evident that while a permanent vigor and productiveness are maintained without it, the less pruning the better. Many planters insist that a tree should never be pruned except for the first of these objects; because, as they allege, if a tree be faithfully kept free from all dead and decaying wood, its growth and productiveness will both be promoted. This is doubtless true to some extent with some sorts of fruit, and unless some peculiar form is desired, it is better to do but little other pruning. Yet with all it is sometimes necessary to prune more freely. Some varieties of the apple, for instance, will grow, if left alone, to too thick ahead, and require thinning out; others grow so straggling that it is frequently necessary to cut away drooping, or crooked and deformed branches, to give the tree some symmetry of appearance. After the first object is attained, the apple, the pear, and the cherry, as standards, require little more, except in the cases last alluded to. Other trees require much more, which will be treated of in the proper place.

PROTECTION.

All orchards and fruit gardens, whether of old or young trees, should be carefully protected against the depredations of cattle or other animals. Good fences to secure them are indispensable, as it is utter folly to expend time and money in planting and rearing a fine orchard, and then allow animals to disfigure, maim, and destroy the trees. Cattle, horses, or sheep should never be allowed to run in orchards; nor should swine be admitted except at intervals of very short periods, in order that they may have time only to eat up the fallen fruit, and not to bark the trees or root up the ground.

In some sections birds are great depredators upon fruit, but as a general thing they do more good in devouring the insects than harm in consuming the fruit. If they become too numerous, they can be frightened away with guns.

MULCHING.

This is simply the process of distributing some proper material around the root of each tree to retain the moisture. When not thus protected, the ground will frequently bake and greatly retard the growth of the tree. Any coarse litter, straw, or forest leaves will be suitable for mulching. It should be used plentifully—spread on to a depth of at least six inches. When properly mulched, trees will retain moisture about their roots, and make a vigorous growth, through the dry and sultry summer months, while others not protected in this way cease to grow altogether, and in many cases wither and die.

PART II.

THE DIFFERENT KINDS OF FRUITS.

Chapter One.

THE ALMOND.

THERE are but few of the almonds worthy of cultivation in the United States. The Hard-Shells may be raised in the Middle States, and the Soft-Shells in the South, while neither can be successfully cultivated north of about forty-two degrees, except under shelter.

A warm, sandy soil is most suitable for this fruit; yet any soil in which the peach and plum will thrive will answer for the almond.

The almond is propagated from the seed, or by budding on the peach or plum. The after-culture may be the same as for the peach—which see.

VARIETIES.

1. SWEET HARD-SHELL.—This is a hardy and productive variety, succeeding well in the climate of Western New York, and still farther north. Nut very large, with a hard shell, and a large, sweet kernel; ripe here about the first of October.—*Barry*.

Tree vigorous, brilliant, and showy.

NOTE.—In presenting the different varieties of fruit introduced into this department, we have chosen to adopt the descriptions—modified and condensed into as narrow limits as possible—of some of the best and most experienced pomologists of the country, whose writings are before the public. In the choice of selections, however, we have been guided by our own judgment, influenced, of course, by an extensive reading and thorough examination of the opinions of others.

2. SWEET SOFT-SHELL.—This is the almond of the shops, of which such immense quantities are annually imported from abroad. South of Virginia, we believe, it succeeds well; and so beautiful a tree and so estimable a fruit deserves the attention of all fruit-growers.—*Barry*.

Cultivators who are desirous of obtaining as great a variety of fruit as possible, would do well to plant a few trees of one or the other of the above-named sorts. Amateurs may find a few other kinds, but they are generally inferior or useless.

Chapter Two.

THE APRICOT.

THE apricot is not very generally grown in the United States. This is partly owing to the fact that people are not much acquainted with its uses, and partly to its being so frequently destroyed by the curculio.

This fruit is also propagated on the peach and plum, as well as on stocks from its own seed. The plum is regarded as the best.

The soil best adapted to the apricot is a strong loam. On lighter soils free mulching and frequent watering are highly beneficial.

VARIETIES.

The kinds most recommended for general cultivation are—

1. **LARGE EARLY.**—Full medium, oblong, pale orange, spotted orange cheek; rich, juicy.—*Thomas, in Annual Register.* Ripens middle of July.

2. **EARLY GOLDEN.**—(Dubois' Early Golden.) Small, smooth, pale orange, sweet, good; free from the stone. Early—midsummer. Hardy and productive.—*Annual Register.*

3. **BREDA.**—Small, brownish orange, juicy, rich. Season, first of August. Tree hardy, good grower, productive.—*Elliott.*

4. **MOORPARK OR PEACH.**—Large, round, orange, red cheek, juicy, rich, excellent. Ripens soon after the Breda, but less hardy.—*Annual Register.*

5. **LARGE RED.**—Dark orange red; round, large, sweet, and juicy.—*Downing.*

6. SHIPLEY'S LARGE.—A good grower and productive.—*Elliott*. Adapted to certain localities.

Notwithstanding the ravages of the curculio have rendered the production of the apricot extremely uncertain, yet cultivators are advised to plant at least a few trees, as it is confidently hoped that some effectual means will be discovered by which these depredators may be held in check. The "golden apricot" is too delicious a fruit to be thus utterly neglected.

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Chapter Three.

THE APPLE.

THE apple is undoubtedly the most valuable, as well as the most widely known, of the whole family of fruits. DOWNING terms it the "world-renowned fruit of the temperate climates;" and it seems to be a native of at least three quarters of the globe. It was well known to the ancients, several varieties of it having been described by writers of antiquity.

Yet widely known as it is, it has nowhere become appreciated as it should be. A large portion of the people of this country seem not to have yet learned that an apple can be used in any other way than eaten raw, or that it can be introduced into the general cooking of the family. Thousands will purchase and eat an apple merely to gratify a taste for its aromatic flavor, without ever once thinking of it as an article of food; and among that rapidly increasing class which is beginning to discover that the apple may be made a staple necessary of life, very few yet know in what a diversity of ways it may be made to contribute to their wants.

The apple will flourish in a greater variety of soils than most other fruits. A dry, warm soil, with a good mixture of rich loam, is the best, with a plentiful supply of lime and potash. It thrives well, in many instances, on gravelly and even stony land, with a good mixture of rich surface mold, and subsoil not too compact.

VARIETIES.

ELLIOTT states that there are now probably two thousand varieties of the apple, described in whole or in part, by the various horticultural writers. It may well be doubted, however, whether there are one tenth of that number so distinct that any but the most experienced pomologists can recognize their characteristic differences. It is no doubt true that, in many instances, apples of

the same variety have different names given them, and are differently described, when grown in dissimilar soils and conditions. And so great is this distinction that frequently experienced fruit-growers have been deceived. Generally speaking, there is a marked difference between Eastern and Western apples of the same variety.

Of the very large number of sorts described by writers on fruits, something over a hundred only of the most valuable have been selected for description in this work. For convenience, they are classed as SUMMER, FALL, and WINTER Apples.

CLASS I.—SUMMER APPLES.

THIRTY VARIETIES.

1. AMERICAN SUMMER PEARMAIN.—Medium size, oblong, skin smooth, red, and yellow; tender, juicy, and rich. Tree, a slow but erect and handsome grower; bears early and abundantly; one of the best in nearly all parts of the country. September.—*Barry*.

It requires a deep, warm soil, well supplied with lime and potash, when it succeeds admirably in all sections.—*Elliott*.

2. BENONI.—Medium, roundish, or slightly conical; striped with bright red; tender, juicy, sub-acid, fine flavor. Handsome grower and good bearer, very valuable. Has proved fine in New England, New York, and some other places.—*Thomas, in Annual Register*. Ripens in August.

3. BOUGH APPLE.—(Sweet Bough or Large Yellow Bough).—Large, roundish; pale greenish yellow, very tender, excellent sweet flavor. Latter part of summer. Moderate and regular bearer. Succeeds well in Northern, Middle, and Western States.—*Annual Register*.

Not reliable for productiveness.—*N. W. Fruit-Grower's Association*.

4. CAROLINA RED JUNE.—Medium size, oblong, beautiful red, agreeable flavor. Fine grower, and bears abundantly.—*Annual Register*.

Pronounced the best early apple; hardy, beautiful, and productive when young.—*N. W. F. G. Association*.

Is a valuable early apple in Illinois and other parts of the West.

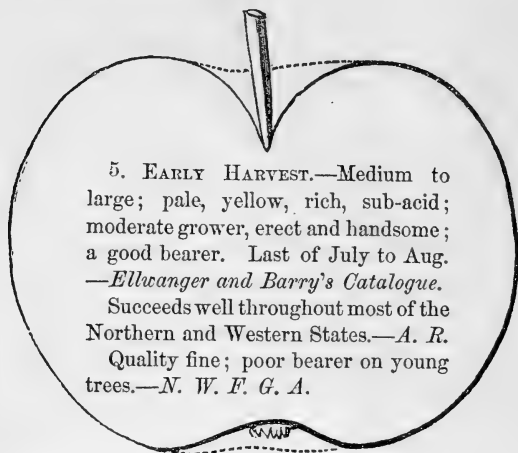


Fig. 1.—EARLY HARVEST.

6. EARLY CHANDLER.—Medium, roundish, striped, good quality. Extensively cultivated in Ohio, where it succeeds well. Vigorous and erect. August and September.—*Barry*.

7. EARLY JOE.—A beautiful and delicious small-sized, deep-red apple. Tree rather a slow but upright grower, and a most profuse bearer. Last of August.—*Ellwanger and Barry*.

Unsurpassed in quality by any early apple. Not extensively proved yet. Must be eaten fresh.—*Annual Register*.

8. EARLY STRAWBERRY.—Medium, mostly deep red; tender, almost melting, mild, fine flavor. Tree a moderate, erect grower, and a good bearer. A beautiful and excellent variety for both orchard and garden. Middle to end of August.—*E. and B.*

9. EARLY PENNOCK.—Popular in Ohio—little known elsewhere. Magnificent, large, conical, yellow, and red, ripening middle of August.—*Barry*.

“Good,” or second rate; bears profusely when young; valuable for market. Synonymous with Shaker’s Yellow.—*N. W. F. G. A.*

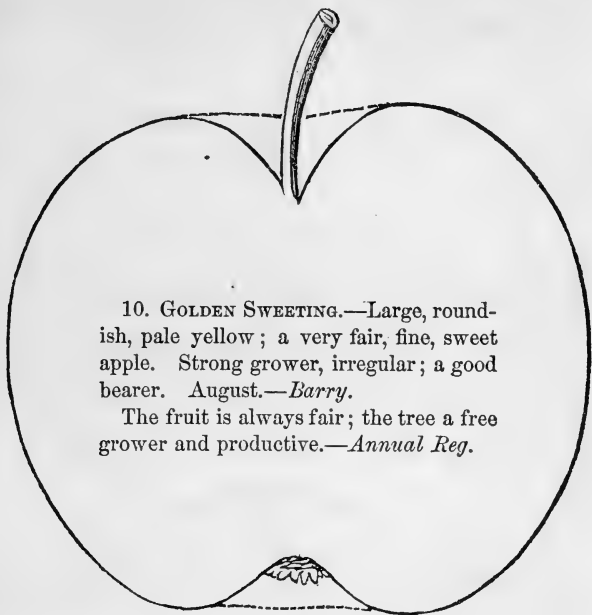


Fig. 2—GOLDEN SWEETING.

10. GOLDEN SWEETING.—Large, roundish, pale yellow; a very fair, fine, sweet apple. Strong grower, irregular; a good bearer. August.—*Barry*.

The fruit is always fair; the tree a free grower and productive.—*Annual Reg.*

11. GARRETSON'S EARLY.—Medium, greenish yellow, tender, juicy, and pleasant. Tree vigorous, very productive, and bears young. Not much disseminated. July and August.—*Barry*.

12. HOLLAND PIPPIN.—A large, greenish yellow, sub-acid, rich, and excellent kitchen fruit. In use the whole month of August. Tree vigorous, spreading, and productive. Very distinct from the Fall Pippin, often called Holland Pippin in Western New York.—*E. and B.*

13. KESWICK CODLIN.—Large, oblong, pale yellow, acid. Tree erect and very vigorous; bears when quite young, and abundantly; excellent for cooking, from July to October.—*E. and B.*

Good for limited culture for culinary purposes.—*N. W. F. G. A.*

14. LYMAN'S LARGE SUMMER.—Large, round, pale yellow, rich, and excellent. The trees require shortening, like the peach, to

keep up a proper supply of young shoots, as they bear in clusters on the ends of the branches. August.—*E. and B.*

15. MANOMET SWEET.—An excellent late summer sweet apple. Tree vigorous and a good bearer. August and September.—*Barry.*

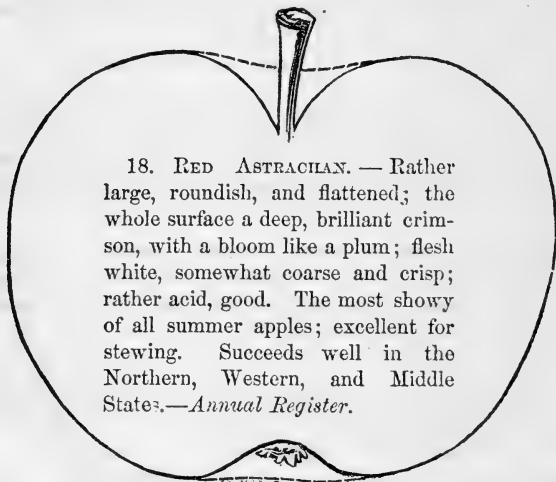
One of the finest early sweet apples, having a deep yellow skin, and a bright vermillion cheek.—*Hovey's Magazine.*

Flesh yellowish, juicy, tender, sugary sweet.—*Elliott.*

16.—OSLIN PIPPIN.—A famous Scotch apple—succeeds well in Upper Canada. Medium size, roundish, yellow; flesh juicy, rich, and fine. Tree productive. August and September.—*Barry.*

17. PRIMATE.—(Rough and Ready.)—Medium, pale yellow, with a blush on the sunny side; resembles summer rose; tender, mild, and good. Tree vigorous and a good bearer. August and September.—*E. and B.*

Ripens for several weeks through the latter part of summer. Not yet fully proved.—*Annual Register.*



18. RED ASTRACHAN. — Rather large, roundish, and flattened; the whole surface a deep, brilliant crimson, with a bloom like a plum; flesh white, somewhat coarse and crisp; rather acid, good. The most showy of all summer apples; excellent for stewing. Succeeds well in the Northern, Western, and Middle States.—*Annual Register.*

Fig. 8.—RED ASTRACHAN.

DAVID THOMAS says of the Astrachan: "Every householder who

owns land—if only a small lot—ought to have one tree of the Astrachan apple, both on account of its earliness and its excellence for cooking. It is so tender as to be cooked almost as soon as it is scalded, and so pure that it has no unpleasant tang, like the Yellow Harvest. It is acid, indeed, but sugar readily overpowers this defect.

“It is a tree of vigorous growth, an abundant bearer, and, what is worthy of note, it bears every year without fail.

“The fruit is of great beauty, having a *bloom* like a plum, on a fine red skin. I know of no apple at this season that would command more customers in market.”

19. PRINCE'S HARVEST.—Fine for stewing when green; flesh white, tender, sprightly, and juicy; form flat, size middling. Tree not very vigorous, spreading, irregular. A great bearer, and in season during the whole month of July.—*Coxe*.

20. SINE QUA NON.—Medium, greenish yellow; tender, fine-flavored. Tree a slender and slow grower, but bears well. August.—*E. and B.*

Tree a poor grower in the nursery, hence not widely cultivated, although productive.—*Annual Register*.

Slow, poor grower, and an indifferent bearer.—*Elliott*.

21.—SOPS OF WINE.—Foreign. Tree vigorous, early bearer; esteemed for its peculiar pink flesh, as a curiosity for dessert. Medium or small, roundish; light, purplish red; flesh yellow, stained with pink, juicy, mild, sub-acid; “very good.” August to September.—*Elliott*.

22.—SUMMER ROSE.—(Woolman's Early.)—Medium, roundish, pale yellow, with a red cheek; tender and delicious: has a beautiful waxy appearance. Tree rather a slow grower, but good bearer. Middle to end of August.—*E. and B.*

This variety is not valuable for market purposes, but its juicy, sprightly, sub-acid character makes it very desirable for the desert. Requires rich, strong soil, lime, and phosphates to perfect the fruit, or keep the tree healthy.—*Elliott*.

23.—SUMMER QUEEN.—Large, conical, striped and clouded with red; rich and fine-flavored. Tree irregular; large, spreading head. August.—*Barry*.

Good on warm, sandy soils; poor on clay soils.—*Thomas.*

24. SUMMER SCARLET PEARMAIN.—(Bell's Scarlet.)—Medium to large, conical, mostly covered with crimson; flesh stained with red, tender and good. Trees grow freely, and bear young and abundantly. August and September.—*Barry.*

25. SWEET JUNE.—Very good, productive, transient; best when fresh from the tree.—*N. W. F. G. A.*

26.—SUMMER SWEET PARADISE.—A large, fine, sweet apple from Pennsylvania; round, green to yellow, juicy, sweet, and rich. August and September.—*Barry.*

27. TOWNSEND.—Tree moderate spreading growth, abundant early bearer. Fruit medium, roundish, pale yellow, streaked with red; flesh dry, sub-acid; "very good." September.—*Elliott.*

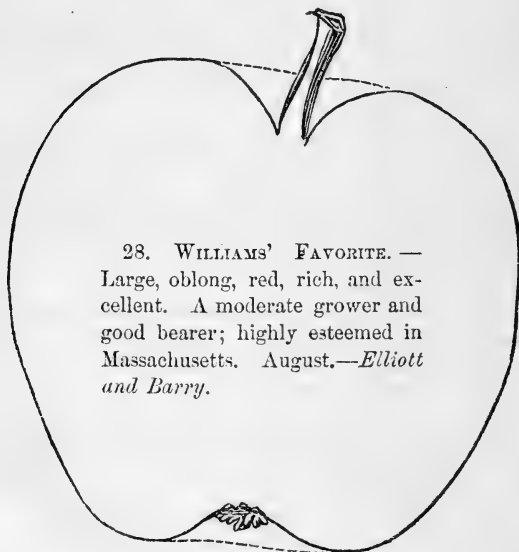


Fig. 4.—WILLIAMS' FAVORITE.

29. TRUMBULL SWEETING.—From Trumbull County, Ohio. Fruit above medium, roundish, flattened; pale yellow, blush, and red spots; flesh white, tender, juicy, sweet; "very good." September to November.—*Elliott*.

30. WETHERILL'S WHITE SWEETING.—From New Jersey; tree vigorous; productive on light soils. Fruit large, roundish, oblong; pale yellow; flesh white, sweet; valued for baking and for stock. September.—*Elliott*.

CLASS II.—FALL APPLES.

FORTY VARIETIES.

31. ALEXANDER.—A very large and beautiful deep-red or crimson apple, of medium quality. Tree vigorous and moderately productive.—October and November.—*Ellwanger and Barry's Catalogue*. ELLIOTT pronounces it a poor bearer.

32. AUTUMNAL SWAAR.—Large, flattish, rich yellow; sweet, spicy, agreeable. An excellent fruit; not widely known. There is a greatly inferior sort known in Western New York as "Sweet Swaar."—*Annual Register*.

BARRY, THOMAS, and ELLIOTT all make this variety synonymous with the "Sweet Swaar."

33. AUTUMN STRAWBERRY.—Medium, streaked light and dark red; tender, crisp, juicy, and fine. Tree vigorous, productive; one of the best of its season. September and October.—*Barry*.

34. BEAUTY OF KENT.—A magnificent English apple, rivaling the Alexander in size and beauty; striped with dark red; tender, but coarse, and indifferent in flavor; excellent for cooking. Tree very vigorous and productive.—*Barry*.

35. BAILEY SPICE.—Growth moderate; fruit medium; round ovate, tapering to the eye; light yellow, blush in the sun; flesh yellowish, sprightly, spicy. October. "Very good."—*Elliott*.

36. COOPER.—Very large, yellow, striped with deep red; tender,

juicy, and fine. Very highly esteemed in Southern Ohio. Productive and valuable. October.—*E. and B.*

37. CLYDE BEAUTY.—Productive. Fruit large, roundish, conical, and slightly ribbed; pale greenish yellow, striped and mottled with light red, deep crimson in the sun; flesh white, fine-grained, juicy, sub-acid; "best." October to December.—*Elliott.*

38. DUTCHESS OF OLDENBERG.—A large, beautiful Russian apple; roundish, streaked red and yellow; tender, juicy, and pleasant. Tree a vigorous fine grower, and young and abundant bearer. September.—*E. and B.*

39. DOCTOR.—Much grown in Southern Ohio and Indiana, producing abundantly of second-rate fruit. Medium to large, flat, yellow; flesh tender, juicy. October to January.—*Elliott.*

40. DRAP D'OR, OR CLOTH OF GOLD.—Very large, golden yellow; flavor mild and agreeable. Tree spreading, moderately vigorous and productive.—*E. and B.*

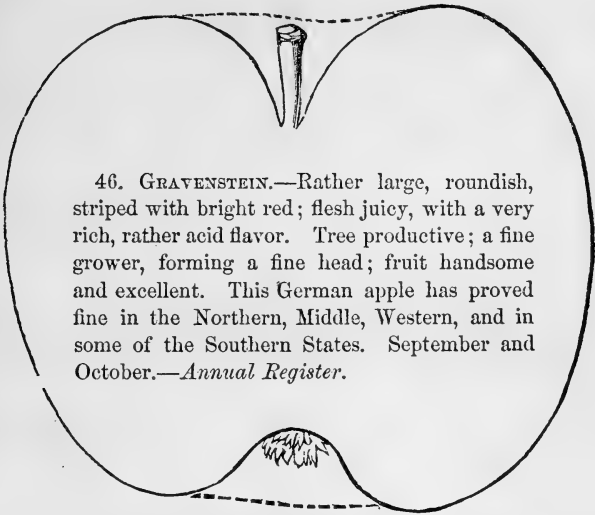
41. FALL PIPPIN.—Very large, roundish, oblong, yellow; tender, rich, and delicious; tree vigorous, spreading, and a fine bearer; esteemed generally.—October to December.—*E. and B.*

42. FALL ORANGE.—Large, roundish, oval; pale yellow; flesh sub-acid and excellent, if fresh and ripe from the tree. A strong grower; fruit always fair; tree bears when young; not widely known.—*Tucker's Annual Register.*

43. FALL HARVEY.—A large, handsome yellow apple, resembling the Fall Pippin, but not so good. Oct. and Nov.—*Barry.*

44. FLEIVER.—Medium, oblong, pale yellow, red cheek, tender and pleasant; has a beautiful, smooth, waxy appearance. Tree a great bearer. German. September and October.—*E. and B.*

45. FAMEUSE.—Medium, deep crimson, flesh snowy white, tender and delicious. Tree vigorous, with dark wood; a beautiful and fine early fruit. Succeeds particularly well in the North. November to January.—*E. and B.*



46. GRAVENSTEIN.—Rather large, roundish, striped with bright red; flesh juicy, with a very rich, rather acid flavor. Tree productive; a fine grower, forming a fine head; fruit handsome and excellent. This German apple has proved fine in the Northern, Middle, Western, and in some of the Southern States. September and October.—*Annual Register*.

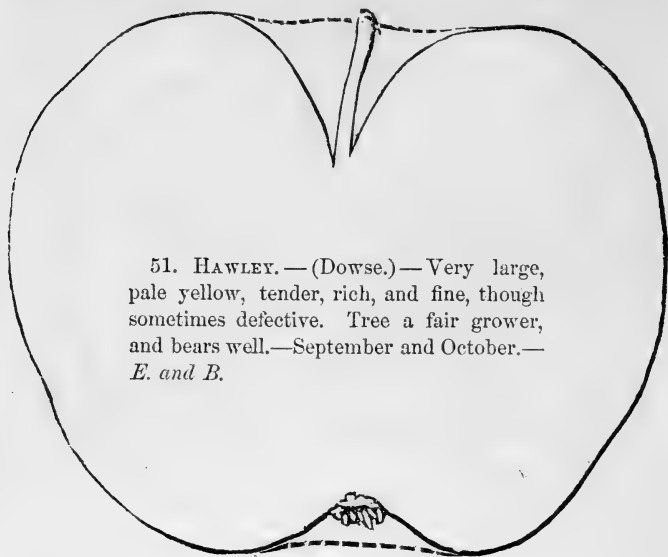
Fig. 5.—GRAVENSTEIN.

47. GOLDEN BALL.—The trees do not bear well while young, but improve as they advance in years. Tree hardy, forming a large, round head, with large, glossy, rich, green foliage; exceedingly valuable for cooking; requires a rich, strong, heavy soil. Fruit large; color, rich yellow; flesh yellowish, tender, sub-acid. October to December.—*Elliott*.

48.—HAWTHORNDEN.—A beautiful Scotch apple, medium to large size, pale yellow and red. Trees have strong shoots, with low, spreading heads—constant and abundant bearers—excellent for cooking.—September and October. Resembles Maiden's Blush.—*E. and B.*

49. HASKELL SWEET.—(Sassafras Sweet of Cole.)—Large, flat, greenish yellow; tender, sweet, and rich. Tree vigorous and productive. Massachusetts. September and October.—*Barry*.

50. JEWETT'S FINE RED.—An excellent New England apple, medium size, tender, and fine-flavored; a good grower and bearer.—said to be well adapted to the North. Oct. and Nov.—*Barry*.



51. HAWLEY.—(Dowse.)—Very large, pale yellow, tender, rich, and fine, though sometimes defective. Tree a fair grower, and bears well.—September and October.—*E. and B.*

Fig. 6.—HAWLEY.

52. JEFFRIES.—From Chester Co., Pa. Tree moderate grower, upright habit, constant, abundant bearer; fruit roundish, flattened, pale yellow; flesh white, tender, crisp, juicy; “best.” September and October. New.—*Elliott*.

Not much proved out of Pennsylvania.—*Annual Register*.

53. LYMAN’S PUMPKIN SWEET.—(Pound Sweet.)—A large, round, green apple, fine for baking; tree very vigorous, upright, and productive. Much grown in Western New York. October to December.—*Barry*.

Very large—good for stock.—*Ohio Pomological Society*.

54. LELAND SPICE.—Rather large, roundish, red; flesh yellowish white, sub-acid, spicy, rich, fine flavor. A Massachusetts variety not much found elsewhere.—*Annual Register*.

55. MUNSON SWEETING.—Medium to large, pale yellow, with a

red cheek; tender, juicy, and good. Tree a very fine grower and good bearer. November and December.—*E. and B.*

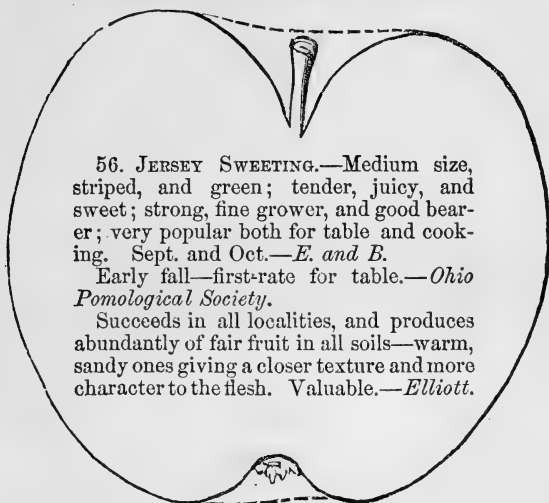


Fig. 7.—JERSEY SWEETING.

57. NORTHERN SWEETING.—A large, beautiful, and excellent sweet apple, resembling Munson Sweeting, but the tree is only of moderate growth and irregular; bears well. November and December.—*E. and B.*

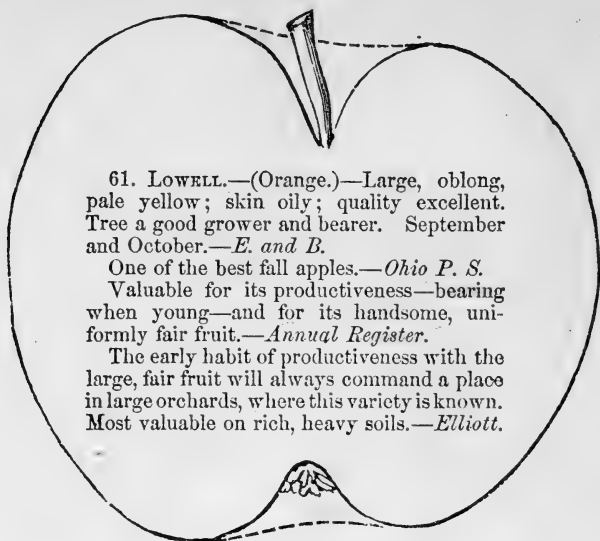
58. ORNE'S EARLY.—Rather large, somewhat ribbed; pale yellow; flesh white, very tender, juicy, and fine flavor. Early autumn.—*Thomas.*

59. POMME ROYAL.—(Dyer.)—Large, roundish, yellowish white, with a brown tinge next the sun; crisp, juicy, and high-flavored; tree a fair grower and abundant bearer. Sept. and Oct.—*E. and B.*

Tree a fair grower, moderately productive.—*Elliott.*

Fine in N. E. and N. Y. Bears when young.—*Annual Register.*

60. PRESIDENT.—Large and beautiful; yellow, with a red cheek; roundish flattened, of good quality; bears most abundantly. We obtained it from Columbus, O. October.—*Barry.*



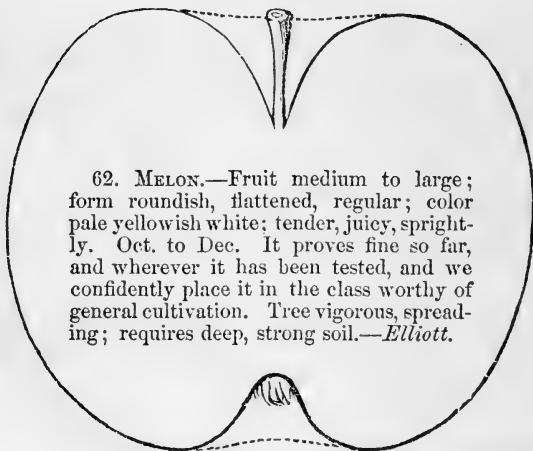
61. **LOWELL.**—(Orange.)—Large, oblong, pale yellow; skin oily; quality excellent. Tree a good grower and bearer. September and October.—*E. and B.*

One of the best fall apples.—*Ohio P. S.*

Valuable for its productiveness—bearing when young—and for its handsome, uniformly fair fruit.—*Annual Register.*

The early habit of productiveness with the large, fair fruit will always command a place in large orchards, where this variety is known. Most valuable on rich, heavy soils.—*Elliott.*

Fig. 8.—LOWELL.



62. **MELON.**—Fruit medium to large; form roundish, flattened, regular; color pale yellowish white; tender, juicy, sprightly. Oct. to Dec. It proves fine so far, and wherever it has been tested, and we confidently place it in the class worthy of general cultivation. Tree vigorous, spreading; requires deep, strong soil.—*Elliott.*

Fig. 9.—MELON.

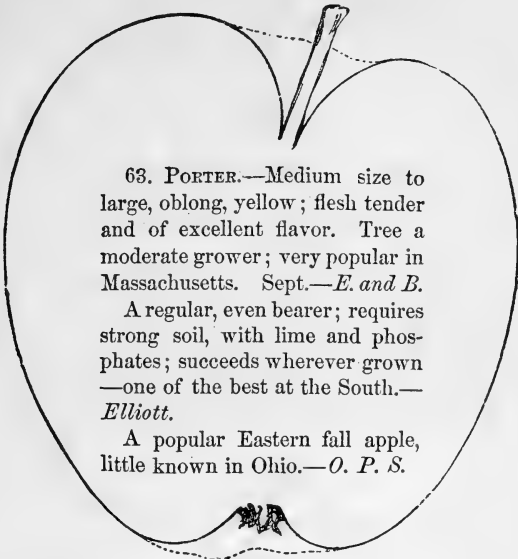


Fig. 10.—PORTER.

64. OVERMAN'S SWEET.—Fruit medium, conical; pale yellow, striped with red; flesh white, juicy, sweet; "good;" baking. October and November.—*Elliott*.

This variety is from the orchard of Mr. C. R. OVERMAN, Canton, Fulton Co., Ill.

65. ROSS NONPAREIL.—Tree productive. Fruit below medium, roundish, dull red, blotched and striped; flesh greenish white, juicy, sub-acid, aromatic; "very good;" nearly "best." October to November.—*Elliott*.

66. ST. LAWRENCE.—Large, round, streaked, red and greenish yellow; a very beautiful, productive, and popular market apple from Canada. October.—*Ellwanger and Barry*.

"Very good."—*Elliott*.

67. SMOKEHOUSE, of Penn.; VANDERVERE, of Cincinnati, and

host of other synonyms.—Rather large, flattish; color a light dull red; rich, aromatic, sub-acid, of fine flavor. Growth crooked and spreading. Succeeds well in New York, and in the Middle and Western States.—*Annual Register*.

Subject to dry rot, when grown on soils deficient in lime; but when supplied with lime, the rot disappears, and the fruit increases in size and improves in quality. Needs good culture. Larger South than North.—*Elliott*.

68. SPICE SWEET.—Large, pale yellow, with a blush on the sunny side, quite waxy and beautiful; tender, sweet, and fine; a good bearer. September.—*E. and B.*

Handsome and high-flavored.—*Ohio Pomological Society*.

69. SUPERB SWEET.—Large, roundish, yellow and red; flesh tender, juicy, rich flavored; tree is a good grower and bearer. September and October. Massachusetts.—*Barry*.

70. TOMPKINS.—A large and beautiful apple from Tompkins Co., N. Y. Golden color at maturity; flesh sub-acid, tender, and rich. Tree productive. October and November.—*Barry*.

CLASS III.—WINTER APPLES.

FIFTY VARIETIES.

71. BAILEY SWEET.—Very large, deep red; flesh tender, rich, and sweet; a superb and excellent sweet apple. Originated in Wyoming Co., N. Y. Tree a vigorous, upright grower. November to April.—*E. and B.*

New—not much proved out of Western New York.—*Ann. Reg.* Flesh yellow, rather dry, sweet; “very good.”—*Elliott*.

72. BROADWELL.—Tree vigorous, spreading, good bearer; medium to large, regular roundish, light yellow; flesh white, sweet, juicy. November to March.—*Elliott*.

Highly commended by Mr. ERNST and others from Cincinnati.—*Ohio Pomological Society*.

Sweet, juicy, and of fine flavor. A fine new Ohio variety.—*Annual Register*.

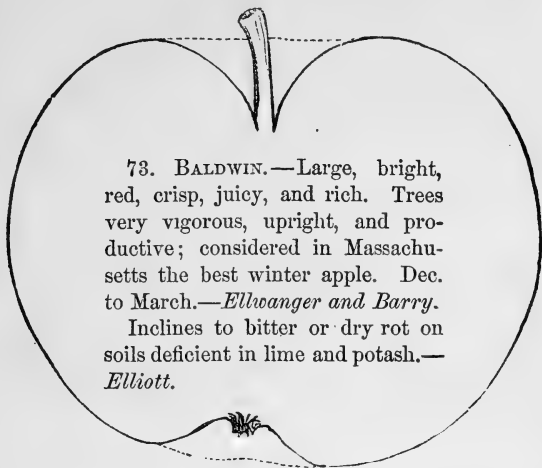


Fig. 11.—BALDWIN.

Mr. ERNST quoted authority stating that when lime was used, this variety would always be free of rot—*Ohio Pom. Soc.*

It is a singular fact, that from Eastern Massachusetts, through New York and Michigan, the Baldwin is valuable and productive; but no sooner do we cross Lake Michigan than its value ceases. In Ohio and Illinois it is of little comparative value.—*North Western Fruit-Grower's Association.*

74. BULLOCK'S PIPPIN (Golden Russet).—Tree medium size, round head, admirably suited to rich soils. Fruit small to medium; roundish, golden yellow, soft russet; tender, juicy, almost buttery, delicate, sprightly. December to March.—*Elliott.*

Excellent and valuable throughout most of the Western States, but at the North and East often quite worthless.—*Annual Register.*
First-rate—not handsome.—*Ohio Pomological Society.*

75. BOURRASSA.—Large, reddish russet, rich and high flavored; esteemed as one of the very best in Lower Canada, and in Maine and Vermont. October to March.—*Ellwanger and Barry.*

Succeeds finely in northern sections, on poor soil. etc. Sub-acid, "best."—*Elliott.*

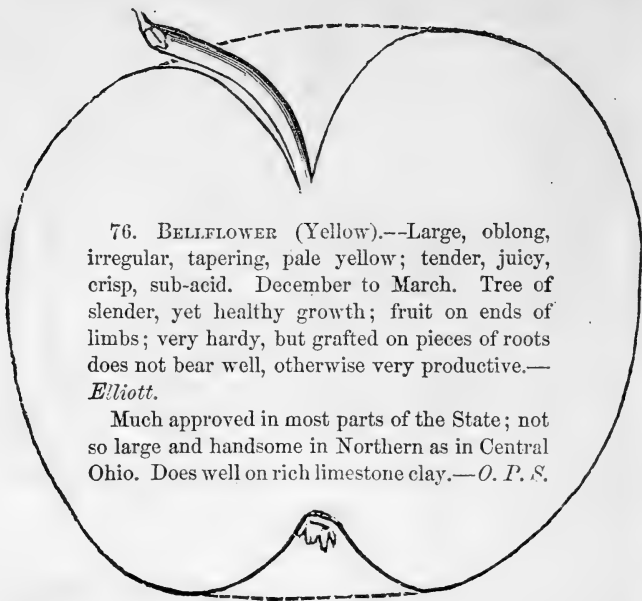


Fig. 12.—YELLOW BELLFLOWER.

77. BLUE PEARMAIN.—Very large, dark purplish red, covered with bloom; juicy and pleasant, sub-acid. Tree a vigorous grower, moderate bearer, and very popular in New England. October to January.—*E. and B.*

78. BALTIMORE.—Tree thrifty, slender, and very productive on warm, rich soils. Size medium to large, round; light yellow, striped with red; flesh white, tender, crisp, juicy, sub-acid. Dec. to March. Distinct from the Baltimore of LINDLEY.—*Elliott.*

79. CANADA PIPPIN.—Tree strong, vigorous, upright, spreading, productive, very hardy; large, roundish, flattened; light greenish yellow; flesh yellowish white, crisp, tender, juicy, sub-acid, sprightly. January to May.—*Elliott.*

80. CHALLENGE.—Tree productive, hardy; large, roundish, flat-

tened; rich yellow; flesh yellowish white, juicy, crisp, sweet, tender. October and November.—*Elliott*.

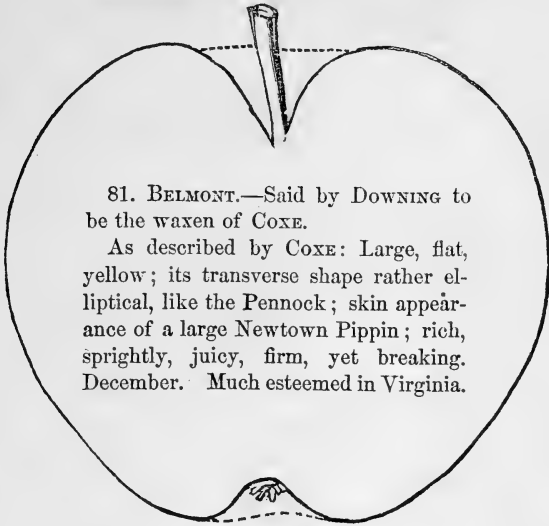


Fig. 13.—BELMONT.

ELLIOTT says: "Tree healthy, vigorous, good bearer; does not succeed on alluvial soils of the West, but on high, warm, or limestone soils does finely. Tender, juicy, sprightly, sub-acid."

Tree a fair grower and very productive. November to February.—*E. and B.*

In Northern Ohio is fine, and a good keeper; while south of Columbus it bears larger fruit, but not so finely flavored, and extremely liable to rot.—*Ohio Pomological Society*.

82.—DANVERS' WINTER SWEET.—Medium size, greenish yellow, with often a brownish cheek; tender, rich, and sweet. Tree vigorous and productive. November to March.—*E. and B.*

Succeeds well in Eastern and Middle States.—*Annual Register*. Generally approved.—*Ohio Pomological Society*.

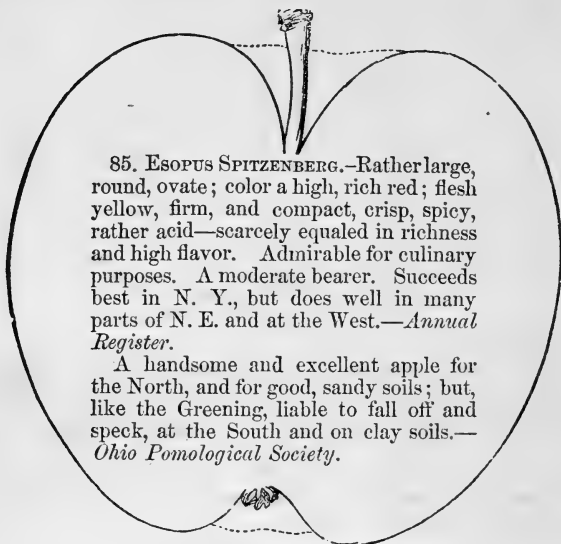
83. DOMINIE.—Medium size, flat, greenish yellow, streaked with red; sub-acid, juicy, and high flavored. Nov. to April.—*Barry*.

Early, good bearer; profitable orchard sort West; succeeding finely in most soils. "Very good."—*Elliott*.

Supposed to be the Wells of Ohio.—*Ohio Pomological Society*.

Quite productive and valuable.—*N. W. F. G. A.*

84. DUTCH MIGNONNE.—A very large, beautiful, and excellent apple, a native of Holland; orange, marked with russet and faint streaks of red, fine flavored. Tree erect and good bearer. November to March.—*E. and B.*



85. ESOPUS SPITZENBERG.—Rather large, round, ovate; color a high, rich red; flesh yellow, firm, and compact, crisp, spicy, rather acid—scarcely equaled in richness and high flavor. Admirable for culinary purposes. A moderate bearer. Succeeds best in N. Y., but does well in many parts of N. E. and at the West.—*Annual Register*.

A handsome and excellent apple for the North, and for good, sandy soils; but, like the Greening, liable to fall off and speck, at the South and on clay soils.—*Ohio Pomological Society*.

Fig. 14.—ESOPUS SPITZENBERG.

86. GREEN SWEETING.—Medium size, greenish, tender, sweet, and spicy; one of the very best long-keeping sweet apples. Tree a moderate, erect grower. November to May.—*E. and B.*

We consider the Green Sweeting the best sweet apple that we grow in this locality; always fair, and of a handsome green color, rarely with a blush on one side. The tree is a good grower and bearer.—*Horticulturist*.

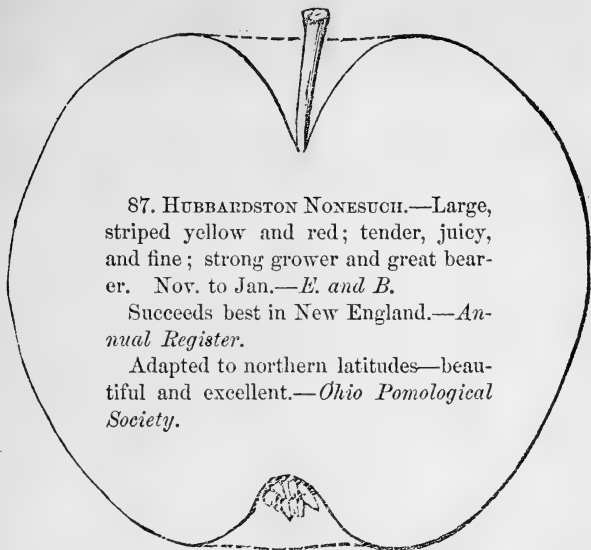


Fig. 15.—HUBBARDSTON NONESUCH.

88. HEREFORDSHIRE PEARMAIN.—Tree hardy, requiring rich, strong soil, when the fruit is of the highest excellence. Medium, roundish, conical; brownish red, mottled; flesh yellowish, tender, mild, sub-acid, aromatic. December to February.—*Elliott*.

89. HARTFORD SWEETING.—Medium, flat, striped; flesh juicy, tender, and rich. Keeps till late in spring; tree very productive; a valuable orchard variety.—*Barry*.

90. LADY APPLE.—A beautiful little dessert fruit; flat, pale yellow, with brilliant red cheek; flesh crisp, juicy, and pleasant. The tree forms a dense, erect head, and bears large crops of fruit in clusters.—November to May.—*Barry*.

A profitable variety for city markets. On rich, clayey soils is apt to speck.—*Ohio Pomological Society*.

91. LIMBER TWIG.—A large, dull-red apple, second-rate in quality, but keeps till June or July, on account of which chiefly it is

cultivated South and West. The tree has weak, pendulous branches, but is exceedingly hardy, and bears immense crops.—*Barry*.

A profuse bearer, and superior for drying.—*Ohio Pomological Society*.

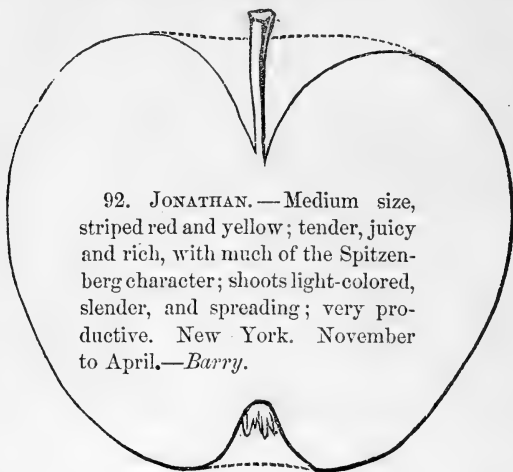


Fig. 16.—JONATHAN.

Some specimens from the West exceedingly beautiful.—*Thomas, in Annual Register*.

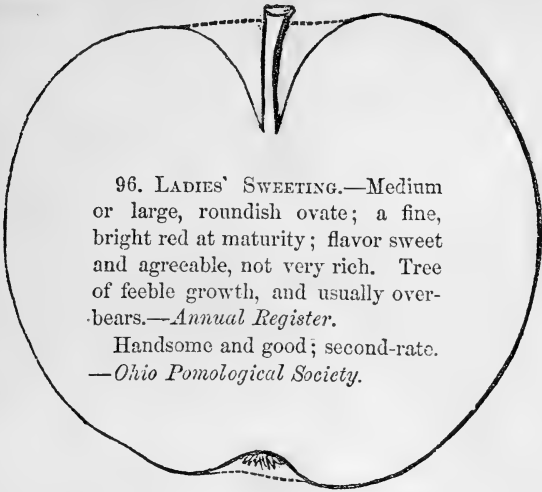
One of the handsomest and best of apples.—*Ohio Pomological Society*.

93. MONMOUTH PIPPIN.—Large, greenish yellow, with a fine red cheek; juicy, tender, and good. Tree erect, vigorous, and productive.—Keeps well till March and April.—*Ellwanger and Barry*.

94. MINISTER.—Large, oblong, striped greenish yellow and red; second quality. Tree vigorous and a great bearer. November to January.—*E. and B.*

95. MICHAEL HENRY PIPPIN.—Medium to large; roundish, conical, yellowish green, specks of russet. October to March. In extensive cultivation at the West, and very successful. Tree very productive.—*Elliott*.

Grown in Indiana under name of White Winter Pearmain.—*Ohio Pomological Society.*



96. LADIES' SWEETING.—Medium or large, roundish ovate; a fine, bright red at maturity; flavor sweet and agreeable, not very rich. Tree of feeble growth, and usually overbears.—*Annual Register.*

Handsome and good; second-rate.
—*Ohio Pomological Society.*

Fig. 17.—LADIES' SWEETING.

97. MOTHER APPLE.—Large, red, flesh very tender, rich, and aromatic. Tree a good bearer. Succeeds well in the North. November to January.—*E. and B.*

98.—NEWTOWN PIPPIN.—It requires a rich limestone, clay soil, or a warm, sandy, rich loam, well dressed with lime and bone-dust. Fruit medium, roundish, oblong, flattened; when ripe, a yellowish green; flesh greenish white, juicy, crisp; Feb. to May.—*Elliott.*

Trees of slow growth—bark rough. Often scabby, unless with high culture. Succeeds well in New York and the West.—*A. R.*

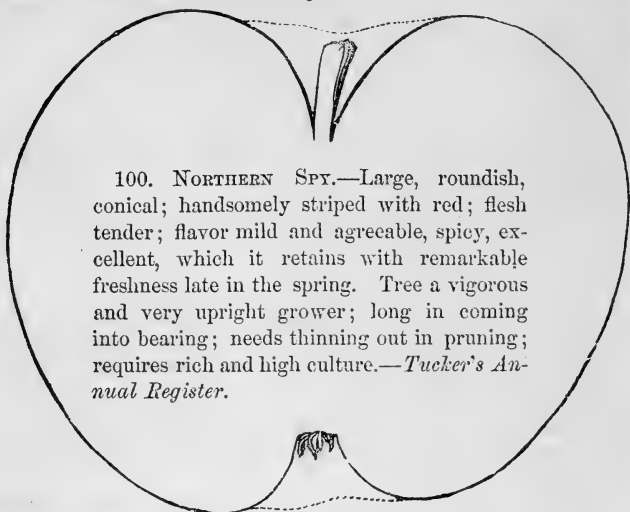
Gen. Worthington thought this and some other old kinds are losing their health and vitality.—*Ohio Pomological Society.*

99. ORTLEY.—(White Bellflower or White Detroit.)—Large, roundish, slightly oblong, pale yellow; flesh sub-acid, sprightly, and fine; succeeds well in New Jersey and in the West.—*Barry.*

In strong, rich soils, throughout the entire Western States, it

proves one of the hardiest, most productive, profitable, as well as best varieties known.—*Elliott*.

One of the best apples adapted for strong soils at the South and West.—*Ohio Pomological Society*.



100. NORTHERN SPY.—Large, roundish, conical; handsomely striped with red; flesh tender; flavor mild and agreeable, spicy, excellent, which it retains with remarkable freshness late in the spring. Tree a vigorous and very upright grower; long in coming into bearing; needs thinning out in pruning; requires rich and high culture.—*Tucker's Annual Register*.

Fig. 18.—NORTHERN SPY.

Considered of doubtful value in Ohio.—*Ohio Pomological Soc.*

While the quality of this variety secures it a place among first-class fruit, it can not be considered a profitable variety until the trees have acquired at least twenty years of age, as it is tardy in coming into bearing.—*Elliott*.

101. OHIO NONPAREIL.—Tree straight, stout growth, compact head; annual bearer; fruit large, roundish, flattened; red and yellow marbled and splashed; flesh yellowish white, tender, juicy, sub-acid; "best." October to December. New.—*Elliott*.

102. PECK'S PLEASANT.—Large, pale yellow, with a brown cheek, very smooth and fair; flesh firm and rich, approaching the flavor of a Newtown Pippin. Tree erect and a good bearer. November to April.—*E. and B.*

Generally esteemed as a first-rate apple.—*Ohio Pom. Society.*
A good bearer; fruit always fair.—*Annual Register.*

103. PHILLIPS' SWEETING.—Native of Ohio. Growth vigorous, upright; wants strong, heavy soils. Fruit medium to large; roundish, conical, slightly flattened; yellow, mottled with red; tender, juicy, crisp. December and January.—*Elliott.*

Large, handsome, and good.—*Ohio Pomological Society.*

104. POMME GRISE.—Small, grayish russet, very rich and high flavored; tree a moderate grower, but good bearer; very valuable in the North.—*E. and B.*

Good bearer, tree of small size. Fruit below medium, roundish; yellow gray or russet; flesh yellow, tender, sprightly; December to February.—*Elliott.*

105. RAWLE'S JAUNET.—(Neverfail.)—Medium to large size; yellow, striped with red; crisp, juicy, rich; a prolific bearer. One of the longest keepers and best apples in the South and Southwest.—*E. and B.*

In quality it is only second-rate, and at the North is not desirable; but south of Cincinnati is highly so, and it succeeds where many others fail.—*Elliott.*

"Very good," not "best;" profitable in most localities.—*North-Western Fruit-Grower's Association.*

106. ROME BEAUTY.—A large and very beautiful new apple, of Ohio. It is roundish, or very slightly conical; pale yellow, mostly covered with bright red; flesh not very fine, but tender, juicy, and good. Early winter. It will undoubtedly be valuable for the orchard.—*Barry.*

107.—RAMBO.—Medium size, streaked and mottled, yellow and red, tender, juicy, and mild-flavored. Tree a good grower and bearer. A widely-cultivated and esteemed old variety. Autumn in the South; October to December in the North.—*E. and B.*

"Best," very productive and profitable.—*N. W. F. G. A.*

108. REINETTE, CANADA.—Very large, flattened, ribbed, dull yellow, flesh firm, juicy, and rich. Tree a strong grower and good bearer. November to March.—*Barry.*

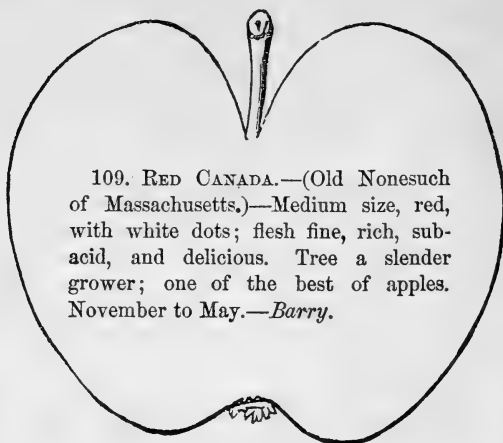


Fig. 19.—RED CANADA.

110. RHODE ISLAND GREENING.—Large, roundish, oblate; green, becoming greenish yellow, always fair, a dull brown blush to the sun; flesh yellow, tender, juicy, with a rather rich acid flavor. Growth strong, best on light soils, very productive.—*Thomas*.

Testimony has shown that it is a gross feeder, and needs soil well drained, rich in lime and phosphates. On usual soils, when the variety is defective, liberal dressing with wood ashes will answer.—*Elliott*.

A great and constant bearer in nearly all soils and situations.—*E. and B.*

Not sufficiently proved at the West yet, but does not promise so well there.—*Annual Register*.

Root-grafted trees were uniformly unproductive. A few had found it to bear well budded or stock-grafted.—*N. W. F. G. A.*

In many localities at the West the Greening, like some others of the older varieties, has not as yet succeeded well. Perhaps, with the cultivation suggested by Elliott, it may yet be found to answer better.

111. RIBSTON PIPPIN.—Large, striped yellow and red; crisp,

juicy, and sprightly. Tree spreading and productive. October to November.—*E. and B.*

112. ROXBURY RUSSET.—Medium to large; surface rough, greenish, covered with russet; flavor indifferent; tree vigorous, spreading, and a great bearer; keeps till June. Its great popularity is owing to its productiveness and long keeping.—*Barry.*

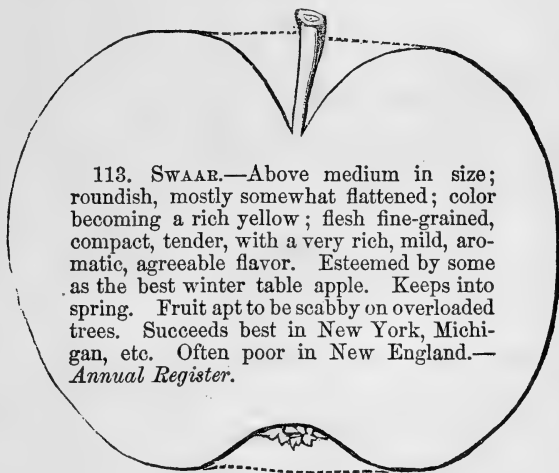


Fig. 20.—SWAAR.

On the rich prairie soils of the West it is said to succeed, proving a good bearer and profitable.—*Elliott.*

Generally productive—quality of the highest character.—*North-Western Fruit-Grower's Association.*

114. TEWKESBURY WINTER BLUSH.—Small, yellow, with a red cheek; flesh firm, juicy, and fine flavored; a remarkably long keeper; tree a rapid, erect grower. Suits the South best, as it requires a long season to mature it. Origin New Jersey. January to July.—*E. and B.*

115. VANDEVERE.—Medium size, yellow, striped with red, and becoming deep crimson next the sun; flesh yellow, rich, and fine;

tree a fair grower and good bearer; succeeds best on light, warm, dry soils. October to March.—*E. and B.*

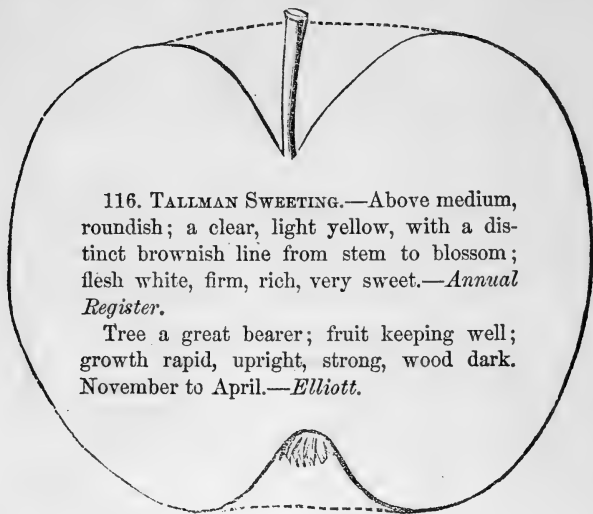


Fig. 21.—TALLMAN SWEETING.

117. WINTER PEARMAIN.—Medium size, dull red stripes on a yellowish ground; flesh tender, pleasant, and aromatic; a moderate grower and bearer; best on warm soils. November to March.—*E. and B.*

118.—WINE-SAP.—Fruit medium, ovate, conical; a bright, clear red, stained and spotted with yellow; juicy, tender, sub-acid. October to March. The tree is hardy, an early and very productive bearer, producing fair, fine fruit in all soils; fine on dry prairies.—*Elliott.*

Constant in productiveness, and of fine quality.—*N. W. F. G. A.*

119. WINE APPLE.—(Hay's Winter.)—Large, roundish, slightly flattened; yellow striped and clouded with bright red; flesh yellow, juicy, crisp, and pleasant. A native of Delaware; succeeds well in many parts of the country.—*Barry.*

120. WESTFIELD SEEK-NO-FURTHER.—Medium to large, striped with dull red, and slightly russeted; flesh tender, rich, and excellent; tree a good grower and bearer, and fruit always fair. November to February.—*Ellwanger and Barry*.

121. YELLOW NEWTOWN PIPPIN.—Trees, though of slender growth, good bearers, and apparently perfectly at home in rich limestone soils. Keeps till June.—*Elliot*.

ADDITIONAL VARIETIES.

The following list of additional varieties, gleaned from various sources, doubtless contains many that are worthy of very general cultivation, and none that have not in certain localities, and in certain soils, with proper cultivation, been pronounced valuable:

Adams,	Court-pendu Plat,	Gilpin,
Albemarle Pippin,	Cumberland Spice,	Giles,
Aromatic Carolina,	Cracking,	Golden Noble,
Autumn Bough,	Cat Pippin,	Gloucester Cheese
—— Pearmain,	Darlington,	Gray Vandevere,
—— Seek-No-Further,	Delight,	Groveland Sweet,
Bailey Sweet,	Detroit Red,	Green Sweet,
Belle et Bonne,	Dunlap's Aurora,	—— Seek-No-Further,
Belzer,	Dillingham,	Granniwinkle,
Beauty of Kent,	Dutch Codlin,	Grindstone,
Bentley's Sweet,	Early Jack,	Ilagloe,
Bean Sweet,	—— Pennock,	Harrison,
Black Apple,	Emperor,	Haskell Sweet,
Blenheim Orange,	English Golden Russet,	Hector,
Borsdorfer,	—— Sweeting,	Harkness' New Favorite.
Bledsoe,	Esten,	Herman,
Blood,	Eustis,	Hooker,
Borovitzky,	Fall Jenetting,	Hunter,
Brabant Bellflower,	—— Queen,	Jabez Sweet,
Brooke's Pippin,	—— Cheese,	Jefferson,
Buffington's Early,	Fallenwalder,	Jersey Pippin,
Burr's Winter Sweet,	Father Abraham,	Jewett's Fine Red,
Bush,	Foundling,	June Apple,
Carnahan's Favorite,	Ferdinand,	July Branch,
Cannon Pearmain,	Franklin Golden Pippin,	Kane,
Cann Apple,	French's Sweet,	Kenrick's Autumn,
Campfield,	Fort Miami,	King Apple,
Carolina Winter Queen.	Flushing Spitzenberg,	King of Pippins,
Cayuga Redstreak,	Fulton,	Kaighn's Spitzenberg
Cole,	Gabriel,	Lancaster Greening,
Coe's Golden Drop,	Garden Royal,	Late Queen,
Cooper's Early White,	Genesee Chief,	Laquier (Lackeer),

Lake,	Pumpkin Russet,	Sweet Pippin,
Ledge Sweet,	Pryor's Red,	—— Wine-Sap,
London Pippin,	Progress,	—— Pearmain,
Long Stem (of Brinckle),	Quince (of Cole),	Spice Russet,
Long Stem (of Cole),	Ragan,	Tetofsky,
Loring Sweeting,	Randall's Best,	Virginia Greening,
Male Carle (Charles Apple),	Raritan Sweet,	Waddell's Hall,
Michael Henry Pippin.	Red Cardinal,	Walworth,
Melvin Sweet,	—— Quarrenden,	Walpole,
Moore,	—— Sweet,	Wagener,
Monarch,	Rosseau,	Wells' Sweeting,
Monk's Favorite,	Republican Pippin,	Wells' (Winter Redstreak)
McLellan,	Reinnette, Seedless,	Western Spy,
Musk Spice,	—— Triumphant,	Wetherell's White Sweeting
Mifflin King,	Roman Stem,	Whitewater Sweet,
Myer's Nonpareil,	Selma,	White Seek-No-Further,
Newark Pippin,	Seever's Red Streak,	—— Juneating,
Northern Golden Sweet,	Schoonmaker,	—— Winter Calville,
Orange,	Scallop Gilliflower,	—— Spanish Reinnette,
Orndorf,	Smith's Cider,	—— Rambo,
Oldtown Crab,	Summer Hagloe,	Winter Cheese,
Osborn's Fall Sweet,	Spring Pippin,	—— Harvey,
Osceola,	Stanard's Seedling,	Willow Twig,
Paradise Winter Sweet,	Stroat,	William Penn,
Paragon,	Sturmer Pippin,	Winslow,
Peach Pond Sweet,	Striped Pearmain,	Wing Sweeting,
People's Choice,	Sugar Sweet,	Yost,
Pennock, or Big Romanite,	Sweet Bellflower,	Yacht,
Pfeiffer,	—— Baldwin,	York Imperial.
Princess Royal,		

CLASS IV.—CRABS.

ORNAMENTAL.

1. RED SIBERIAN.—Inch in diameter, tree erect; bears at two or three years.
2. YELLOW SIBERIAN.—Yellow—about as large as No. 5.
3. LARGE YELLOW SIBERIAN.—Larger than No. 3; tree a vigorous and rapid grower.
4. DOUBLE FLOWERING CHINESE.—A beautiful ornamental tree, producing large clusters of semi-double rose-colored blossoms.

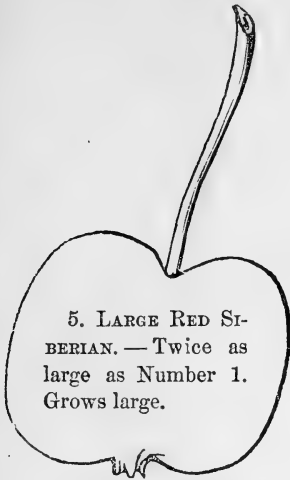


Fig. 22.—LARGE RED SIBERIAN.

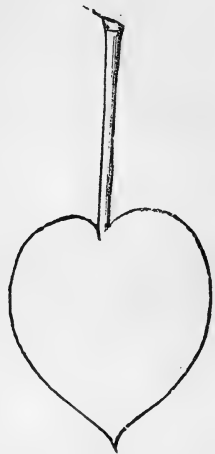


Fig. 23.—CHERRY CRAB.

6. CHERRY CRAB.—Small, round, red.—*E. and B.'s Catalogue.*



Fig. 24.—ASTRACHAN, OR EVERGREEN APPLE CRAB.

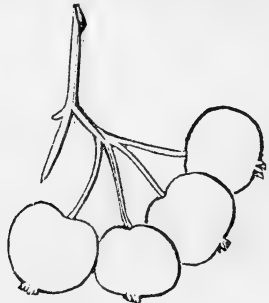


Fig. 25.—CURRANT CRAB.

7. ASTRACHAN, OR EVERGREEN APPLE CRAB.—Fruit deep green, speckled with white dots; leaves evergreen, remaining on the tree all winter.

8. CURRANT CRAB.—Fruit like the currant, and hang in clusters. Ornamental in fruit and flowers.

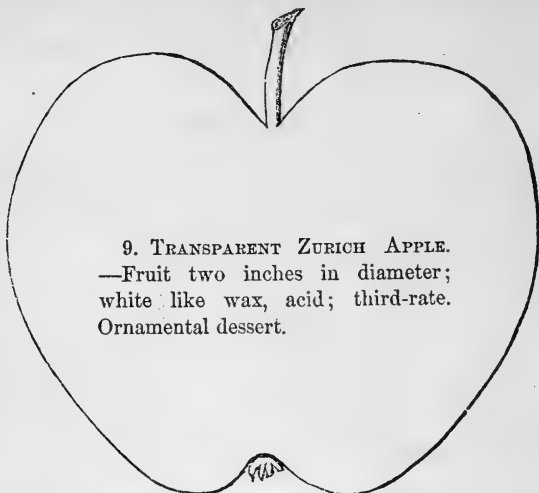


Fig. 26.—TRANSPARENT ZURICH APPLE.

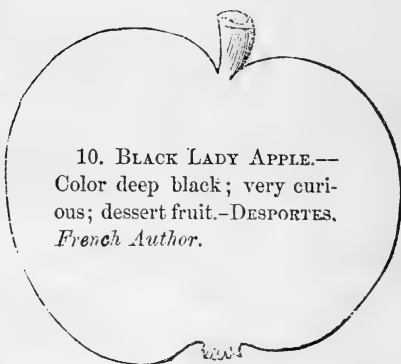


Fig. 27.—BLACK LADY APPLE.

These crabs, with their beautiful blossoms and handsome red and yellow fruit, are very desirable for ornament in a fruit garden or small orchard; and all who love the beautiful in nature, and wish

to adorn their homes, should procure a few of the different varieties. Some of the larger sorts are also useful, as well as ornamental, being esteemed by many for preserving. They are generally early bearers, and very prolific.

SELECTION OF VARIETIES.

There are very few individuals who do not, before planting an orchard, seek the advice of some one as to what varieties they should procure; and many in this way are induced to plant trees which are not worthy a place in any collection. It is a very difficult matter to procure just such trees, and those alone as will certainly be best adapted to the wants of the planter, and to the character of the soil in his particular locality. Trees that succeed well in one kind of soil, are sometimes almost worthless in others; while, again, others seem to flourish almost equally well in all kinds of soil. Of the one hundred and twenty-one varieties described in the foregoing list, there is not perhaps one that has not been tested and known to succeed in several localities distinct and remote from each other; and not one but may be regarded as valuable for a specific use. Yet there are many degrees of excellence, and some of these uses are much more important than others. Hence, as a general rule, a variety that has the greatest number of votes of practical fruit-growers in its favor, in the State or district in which the planter may reside, may be safely chosen to plant.

The following have all been recommended as doing well in at least *nine* States of the Union:

Baldwin,	Newtown Pippin.	Roxbury Russet,
Early Harvest,	Rambo,	Sweet Bough,
Esopus Spitzenberg,	R. I. Greening,	Yellow Bellflower.
Fall Pippin,		

The following in at least *six* States of the Union:

Danvers' Winter Sweet,	Maiden's Blush,	Summer Rose,
Fameuse,	Porter,	Vandevere,
Gravenstein,	Red Astrachan,	Wine-Sap.
Hubbardston Nonesuch,	Summer Queen,	

The following in at least *four* States:

Golden Russet,	Smokehouse, *	Williams' Favorite,
Northern Spy,	Swaar,	White Bellflower.
Rawle's Janet,		

And the following have been proven excellent, and are highly recommended as suited to various localities in *three* or more States:

Am. Summer Pearmain,	Sine Qua Non,	Westfield Seek-No-Further,
Belmont,	Lowell,	English Russet,
Early Strawberry,	Carolina Red June,	Tallman Sweeting,
Fallenwalder,	Hawley,	Broadwell,
Golden Sweet,	Dyer,	Ladies' Sweeting,
Holland Pippin,	Jersey Sweeting,	Roman Stem
Jonathan,	Summer Sweet Paradise,	Wells,
Lady Apple,	Autumnal Swaar,	Wagener,
Pryor's Red,	Melon,	McLellan,
Penoni,	Bullock's Pippin,	Fulton,
Cooper,	Peck's Pleasant,	Harkness' Favorite.
Michael Henry Pippin,	Red Canada,	

Most, if not all, of the above-named, besides others, have been passed upon favorably by State societies and conventions of experienced fruit-growers.

The following list was, after thorough discussion, recommended for general cultivation by the Fruit Committee of the American Institute in 1848:

Early Harvest,	Baldwin,	Roxbury Russet,
R. I. Greening,	Am. Summer Pearmain,	Summer Rose.
Large Yellow Bough,		

And for particular localities—

Early Strawberry,	Gravenstein,	Fall Pippin,
Yellow Bellflower,	Esopus Spitzenberg,	Newtown Pippin.

The American Pomological Society has recommended the following list for general cultivation:

Am. Summer Pearmain,	Hubbardston Nonesuch,	Roxbury Russet,
Baldwin,	Lady Apple,	Summer Rose,
Bullock's Pippin,	Ladies' Sweeting,	Swaar,
Danvers' Winter Sweet,	Large Yellow Bough,	Vandevere,
Early Harvest,	Melon,	White Seek-No-Further,
Early Strawberry,	Minister,	Williams' Favorite,
Fall Pippin,	Porter,	Wine-Apple,
Fameuse,	Red Astrachan,	Wine-Sap.
Gravenstein,	Rhode Island Greening,	

The editor of the *Albany Cultivator*—no better authority—has recommended the following for his region:

FOR SUMMER.

Early Harvest,	Sops of Wine,	Am. Summer Pearmain,
Red Astrachan,	Benoni,	Sweet Bough,
Sine Qua Non,	Summer Sweet Paradise,	Williams' Favorite.

FOR AUTUMN.

Autumn Strawberry,	Dyer,	Rambo,
Gravenstein,	Fameuse,	Belmont,
Porter,	Hubbardston Nonesuch,	Fall Pippin.
Lowell,		

FOR WINTER.

R. I. Greening,	Roxbury Russet,	Peck's Pleasant,
Baldwin,	Newtown Pippin,	Yellow Bellflower,
Swaar,	Ladies' Sweet,	Jonathan,
Esopus Spitzenberg,	Tallman Sweet,	Vandevere,
Red Canada,	Broadwell,	Westfield Seek-No-Further,
Northern Spy,	Danvers,	Rawle's Janet,
English Russet,	Sweet Baldwin,	Pryor's Red.

GEORGE JACQUES, Esq., of Worcester, Mass., an experienced fruit-grower, recommends the following list, through the columns of the *American Journal of Agriculture*:

SUMMER.

Red Astrachan,	Williams' Favorite,	Meanomet Sweeting.
Early Sweet Bough,	Duchess of Oldenberg,	

EARLY AUTUMN.

Porter,	Gravenstein,	Leland Spice.
Jersey Sweeting,	Pumpkin Sweeting,	

AUTUMN.

Hubbardston Nonesuch,	Capron's Pleasant,	Mother.
Maiden's Blush,	Fameuse,	

WINTER.

Minister,	Peck's Pleasant,	Baldwin.
R. I. Greening,	Esopus Spitzenberg,	

WINTER AND SPRING.

American Golden Russet,	Seaver Sweeting,	Roxbury Russet.
Danvers' Winter Sweet,	Ladies' Sweeting,	

The Fruit Committee of the Cincinnati Horticultural Society, in

1853, reported the following list of *ten* varieties, for an orchard of 100 trees, suitable for that vicinity :

July and August.....	2 Summer Rose.	Nov. and Dec.....	20 White Bellflower
July and August.....	2 Strawberry.	January	15 Pryor's Red.
September.....	2 Fall Pippin.	Feb. to April.....	40 Rawle's Janet.
October	4 Rambo.	March.....	5 Newtown Pippin.
Nov. and Dec.....	5 Gold'n Russet.		
Nov. and Dec.....	5 Vandevere.		100 trees.

HON. MARSHALL P. WILDER, of Massachusetts, recommended the following as being best adapted to his locality :

For three sorts—

Large Early Bough, Gravenstein, Baldwin.

For six sorts, add—

Red Astrachan, Porter, R. I. Greening.

For twelve sorts, add—

Early Harvest, Williams' Favorite, Minister,
Fameuse, Hubbardston Nonesuch, Roxbury Russet.

For Winter Sweet Apples—

Seaver Sweet, Tallman's Sweeting, Lyman's Sweet.
Danvers' Winter Sweet,

For new sorts of high reputation, but not yet fully proved in that region—

Northern Spy, Melon, Wagener.
Ladies' Sweeting, Hawley,

The Cincinnati *Western Horticultural Review* recommends for an orchard of 1,000 trees in the region of St. Louis, Mo., as follows :

200 Rawle's Janet,	town-Spitzenberg, Fall Pippin, Yellow and White Bellflower, Early Strawberry, Early Harvest, Benoni, Williams' Favorite, Bohanan, Gravenstein, Cooper, Rome Beauty, Rambo, Belmont, and Fameuse.
200 Newtown Pippin,	
200 Pryor's Red,	
50 American Golden Russet,	
100 Gilpin, Michael Henry Pippin, and Smith's Cider, and	
25 About equally divided between New-	

The following list is furnished by Dr. BRINCKLE, of Philadelphia, to THOMAS' *Fruit Culturist* :

Early Harvest,	Summer Rose,	Bullock's Pippin,
Early Bough,	Summer Pearmain,	Winter Pearmain.
Fall Pippin,		

T. S. PLEASANTS, Esq., of Petersburg, Va., furnishes the following list, also from the *Fruit Culturist* :

May Apple,	Albemarle Pippin,	Carter's Pearmain,
July Branch,	Old Town Crab,	Wine-Sap,
Gloucester Cheese,	Red June,	Pryor's Red,
Fall Cheese,	Fall Pippin,	Limber Twig.
Winter Cheese,	Bellflower,	

F. R. ELLIOTT, Esq., author of the "Fruit-Grower's Guide," names the following:

Best single variety for Northern Ohio, Belmont or Waxen.

Three best—summer, autumn, and winter—

Summer Rose,	Fall Pippin,	Red Canada, or Nonesuch.
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Three best summer—

Early Harvest,	Summer Rose,	Am. Summer Pearmain.
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Three best autumn—

Gravenstein,	Porter,	Fall Pippin.
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Three best winter—

Belmont,	Swaar,	Nonesuch.
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The following have been proved as suitable to Northern Illinois, Wisconsin, Iowa, and other portions of the Northwest—on the authority of various correspondents of the *Prairie Farmer* and members of fruit conventions and societies:

Rawle's Janet,	Sweet June,	Yellow Bellflower,
Red Astrachan,	Fameuse,	Early Pennock,
Swaar,	Tallman Sweeting,	Keswick Codlin,
Duchess of Oldenberg,	Esopus Spitzenberg,	Am. Summer Pearmain,
Rambo,	Wine-Sap,	Carolina Red June,
Fall Wine,	Dominie,	Autumn Strawberry,
Maiden's Blush,	White Bellflower,	Belmont.

The following were pronounced positively good, by the number of votes attached to each, in convention of 22 members of the N. W. Pomological Society, at Chicago, 1853.

Early Harvest.....	had votes...20	Fall Pippin.....	had votes...14
Carolina June.....	"...14	R. I Greening.....	"...12
Rawle's Janet.....	"...12	Maiden's Blush.....	"...11
Sweet Bough.....	"...11	Fameuse.....	"...10
Summer Queen.....	"...10	Roxbury Russet.....	"...9
Vandevere.....	"...9	Yellow Bellflower.....	"...15
Rambo.....	"...17	Esopus Spitzenberg.....	"...12

Baldwin.....	had votes...11	Summer Rose.....	had votes... 6
Wine-Sap.....	" ...10	Golden Russet.....	" ... 6
Am. Summer Pearmain ..	" ... 9	American Golden Russet.	" ... 5
White Bellflower.....	" ... 8	Newtown Pippin	" ... 5
Swaar	" ... 7	Keswick Codlin.....	" ... 5
Sweet June.....	" ... 7	White Winter Pearmain..	" ... 5

These lists might be extended to a much greater length, but it is not deemed necessary. Those given are from extreme and distant parts of the Union (excepting the far South), and may serve to make known to planters the varieties most in repute in their respective localities. A careful study of these lists, and the descriptions heretofore given, will enable the intelligent planter to make a good and suitable collection of trees.

INSECTS AND DISEASES, AND THEIR REMEDIES.

The diseases and enemies of the apple are not near so numerous and formidable as those of several other fruits.

THE BORER.—This is a grub which eats into the wood near the surface of the ground, and is very destructive in some woods, but has not yet made himself formidable to the apple in many parts of the country.

A wash made of tobacco, sulphur, and soap-suds, applied in the spring, after digging away the earth from the trunk of the tree, has been used with good success. A mound of ashes placed around the tree in the winter, and allowed to remain till after the hatching of the eggs in early summer, is a good preventive. When fairly in and at work in the wood, the best remedy is to find their holes, and kill them with some sharp instrument—an awl or a piece of wire.

THE BLIGHT.—This is a disease for which no satisfactory cause seems yet to have been discovered. It attacks generally the ends of the branches all over the tree alike.

As no cause has been discovered, no certain remedy has been proposed. Recourse must be had to the knife. Cut away all the affected branches, as low as the disease has appeared, and burn or otherwise destroy them. Continue the process, if necessary, until the whole tree is cut away. Trees in good soil, and kept in a proper state of cultivation, will not be so subject to attacks of the Blight as those otherwise situated.

THE BARK LOUSE—is a little brown insect, which appears sometimes in great numbers on the bark of the tree and branches, and lives upon the sap.

They may be destroyed by a decoction of tobacco-juice and soap-suds, applied by dipping or sprinkling with a syringe. They may be removed from the body and large limbs by scraping. A mixture of lime, soap, and water is also a good remedy.

ELLIOTT says: "A good wash for all insects is made of—say five gallons of weak ley, one pound powdered sulphur, and four ounces soot, or lampblack, thoroughly mixed."

A solution of aloes is good to protect trees from vermin—so says RASPAIL.

THE CATERPILLAR.—In some seasons these pests have been very destructive to the apple-tree—so much so as to almost destroy whole orchards. Their eggs are usually deposited in the fork of a limb, or near the ends of the branches, in clusters, where they remain all winter, and hatch early in the spring. At first they are not larger in circumference than a pin, but continue growing till they reach the size of a small pipe-stem, and two inches in length—living meanwhile upon the foliage, which by the middle of summer will be entirely stripped from the tree.

To destroy them, cut away and burn the small branches which hold them during the winter, or before they begin to crawl in the spring; or if this has been neglected, brush them off with a swab saturated with soap-suds, or lime-water, or spirits of ammonia. A brush made of rough tow, grass, straw, or old woolen rags, and attached to the end of a pole, and turned a few times in their nests, will remove them. If a few escape and migrate to other branches or other trees, and build new homes, they must be treated in the same manner. The swabs should be burned after being used.

THE APPLE MOTH.—This insect deposits its eggs in the eye or blossom end of the young fruit, during the months of June and July, from which is hatched in a short time a whitish grub, that eats into the core, causing the apple to decay and fall to the ground. The grub then leaves the fruit, and finds its way to the bark of the tree, beneath the scales of which it winds itself a cocoon, and awaits the return of another summer.

The best remedy is to keep the bark smooth by scraping, and by

a thorough washing with soft-soap at the opening of each spring. The fallen fruit should all be eaten up by the hogs.

ANTS—are sometimes very troublesome about fruit-gardens, by making their hillocks among the trees. The plow or hoe will generally compel them to find other quarters, but not always. They may be extirpated by pouring boiling water in upon them. If they infest the ripening fruit, as they sometimes do, catch them by suspending an open bottle in the tree, partly filled with syrup or molasses—then destroy them.

RABBITS—are very destructive to young orchards and nurseries, by gnawing the bark, especially during the snows of winter. They eat the bark for food.

The trees must be protected by tying split corn-stalks, or small strips of bark, or shingles around the body, or by wrapping them carefully with wisps of twisted straw, to the height of two feet or more.

MICE—will also frequently injure the bark of trees near the base, especially if any grass or straw in which they can shelter has been allowed to remain there.

To keep them away, heap a mound of dirt around each tree in the fall, to the depth of ten or twelve inches, and allow it to remain till spring.

Chapter Four.

THE BLACKBERRY.

THIS is one of the best fruits for the table, and popular in all markets and among all classes of people; and is certainly deserving of much more attention than it has heretofore received as a garden fruit. The remark of the farmer whose fields were overgrown with briars, and who refused to allow his neighbors to pick the berries, because, as he alleged—"If they had not been so lazy, they might have had blackberries of their own," will in time cease to be a joke; for they will be obtained by industry and cultivation, instead of neglect and waste.

There are varieties to be found, no doubt, in many localities, which, by careful and judicious culture and management, might almost be made to rival the celebrated New Rochelle or Lawton Blackberry. That, it is said, was originally transplanted from the roadside to the garden—and high cultivation did the rest.

The Blackberry is propagated by layers and by seeds. It is rather hard to transplant, which may be mainly owing to the fact that its habits have not yet become sufficiently understood. It abounds in a rich and mellow, and rather damp soil; flourishes in its wild state mostly by the side of old logs or stumps, or around stone heaps, or in the corners of fences, or any place where large quantities of leaves or other vegetable mold abounds.

The two varieties most cultivated in the United States at the present time are the

IMPROVED HIGH BUSH.—Introduced into notice by Capt. LOVETT, of Beverly, Mass. "The berry is long, egg-shaped, shining black, juicy, and rich; the plant erect, blossoms white; ripens at a most timely season—after the raspberry." Capt. L. has produced them an inch and a half long.



Fig. 28.—IMPROVED HIGH BUSH.

NEW ROCHELLE, OR LAWTON BLACKBERRY.—This has been for several years cultivated in and about New Rochelle, N. Y., and was first brought to public notice by Mr. WILLIAM LAWTON, of that place.



Fig. 29.—NEW ROCHELLE BLACKBERRY.

In a description of it in a late Patent Office Report, he says: "The New Rochelle Blackberry sends up annually large and vigorous upright shoots, with lateral branches, all of which, under common cultivation, will be crowded with fine fruit, a portion of them ripening daily, in moist seasons, for six weeks. They are perfectly hardy, always thrifty and productive; and I have not found them liable to blight

or injury by insects. Except that they are perfectly hardy, and need no protection in winter, the cultivation may be the same as the Antwerp Raspberry; but, to produce berries of the largest size, they should have a heavy, damp soil, and shade."

Besides Mr. LAWTON, Messrs. GEORGE SEYMOUR & Co., of South Norwalk, Conn., have been successful cultivators of this variety. From a circular received from them last spring, the following paragraphs are extracted:

"The plants are perfectly hardy, and will flourish in any good soil, whether moist, dry, or shaded.

"They commence bearing the second summer after planting, and produce enormous crops of large and delicious fruit every year, at the time when it is the most needed. The berries begin to ripen the latter part of July, and a portion of them mature daily, for four to six weeks.

"This fruit is pre-eminently adapted to small city inclosures, as it can be grown by the bushel in a very small space, with but trifling care."

From the same circular we extract the following:

"DIRECTIONS FOR PLANTING AND CULTURE.—As soon as you receive the plants, unpack and bury them in fresh soil; let them remain there until your ground is prepared. In no case suffer the roots to be exposed to the wind or sun.

"Lay out a bed from four to six feet wide, near a fence or any other convenient place; spade the ground from fifteen to twenty inches deep; if the subsoil is gravel, throw it out, and put good soil in its place. Distance should be from six to eight feet apart. The stems of the plants should be cut down to six inches. Plant the roots about three inches deep; when planted in autumn, cover with straw, mulch, or litter, which remove in the spring.

"The new shoots start from the roots, consequently the ground about the plants should be cultivated with care until they make their appearance. Allow but two canes to grow from each root the first summer; these will produce fruit the second summer. At the same time other shoots will make their appearance, preparatory to bearing the ensuing season, and but two of these should be allowed to grow—consequently there will be two growing and two

bearing canes to each root every season; the latter will die in the fall, and should then be removed."

Mr. BARRY says of this fruit: "It can not fail to be an object of very profitable culture within any reasonable distance of large cities. * * * No one need expect such wondrous large fruit, however, as people have witnessed at New Rochelle and Norwalk, in ordinary soil and with ordinary culture. Manure must be applied unsparingly, and the ground must be kept clean and friable as work can make it. *Rich soil and clean culture* are indispensable to the growth of large fruits of any kind."

Chapter Five.

THE CHERRY.

THE CHERRY will do well on almost any dry soil, but that quality is indispensable—it must be *dry*. Few soils are sufficiently dry without artificial draining.

In the richer class of soils, cherries should only be cultivated in the spring and early summer—never later than August, as late culture induces second growth and immature wood, incapable of withstanding the rigor of the succeeding winter.

Pruning should be done in July—some recommend March. As a standard tree, the cherry should be pruned but little—only to cut away the decayed, crooked, or deformed limbs.

VARIETIES.

1. AMERICAN AMBER.—Medium size, amber color, delicious. Vigorous and productive. First of July.

2. BLACK HEART.—An old sort; black, large, tender, rich, prolific. First of July.

3. BLACK EAGLE.—Large, black, juicy, high-flavored, productive. First of July.

4. BELLE DE CHOISY.—Medium, amber, tender, sweet, and rich; rather a shy bearer. End of June.

5. BELLE MAGNIFIQUE.—Magnificent, large, red, juicy, tender, rich. Slow grower; profuse bearer. Last of July.

6. BIGARREAU., OR YELLOW SPANISH.—Large, pale yellow and red, firm, juicy, delicious. One of the best. Vigorous and productive.

7. **BUTTNER'S YELLOW.**—Medium, pale yellow, crisp, juicy, sweet. Vigorous and productive. Its peculiar and beautiful color makes this sort desirable. End of July.



8. **BLACK TARTARIAN.**—Very large, purplish black, tree erect and beautiful, immense bearer. One of the most popular varieties in all parts of the country. First of July.

9. **BURR'S SEEDLING.**—Large, pale red, delicious. In luxuriant foliage, stateliness of growth, and productiveness it surpasses even the Black Tartarian.

10. **BLACK HAWK.**—Large, firm, black, resembling Black Eagle.

11. **BUTTNER'S MORELLO.**—Medium, red,

Fig. 30.—**BLACK TARTARIAN.** acid; valued for its lateness.

12. **CLEVELAND BIGARREAU.**—Large, red and yellow, sweet and rich; spreading and productive. Early.

13. **CHINA BIGARREAU.**—Medium, oval, red speckled, sweet, and rich. Vigorous, profuse bearer. Valuable. July.

14. **CARNATION.**—Large, light red and orange, tender, rich, acid. Profuse bearer—very valuable. Last of July.

15. **COE'S TRANSPARENT.**—Medium, pale amber, tender, sweet, fine. Tree vigorous and erect. End of June. New.

16. **DOWNTON.**—Creamy white and red, tender, and fine-flavored. Rapid grower. Ripens with Black Tartarian.

17. **DELICATE.**—New, rich, juicy, sweet. Medium, amber, yellow. Thrifty and productive.

18. **DONNA MARIA.**—Medium, dark red, tender, juicy, rich. Tree small, very prolific. Middle of July.

19. DOWNER'S LATE RED.—Rather large, light red, tender, juicy, vigorous and productive. Middle of July.



Fig. 31.—DOWNER'S LATE RED.

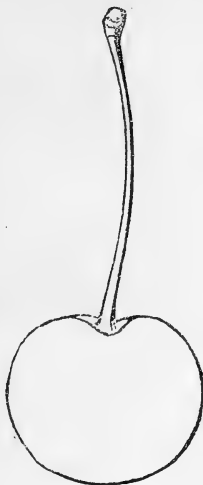


Fig. 32.—GOVERNOR WOOD.



Fig. 33.—Iocosot.

20. EARLY RICHMOND.—Early, red, acid—for cooking. June.

21. ELTON.—Large, pointed, pale yellow and red, juicy, and rich. Tree vigorous and irregular. End of July.

22. EARLY PURPLE GUIGNE.—Medium, purple, tender, juicy, and sweet. Growth slender and spreading.

23. GOVERNOR WOOD.—Large, round, light red, tender, juicy, sweet, rich. Middle of June. Vigorous and productive while young.

24. GRIDLEY, OR APPLE CHERRY.—Medium, dark brown, firm, sprightly, sub-acid. Immense bearer. Last of July.

25. INDULLE, NAIN PRECOCE.—Earliest of all cherries. Last of May. Dwarf in habit, quite prolific.

26. IOCOSOT.—Large, rich, glossy, almost black, tender, juicy, rich, sweet. Last of June. Thrifty—productive. New.

27. **KENNICOTT.**—Large, amber yellow, mottled with red; firm, juicy, rich, and sweet. Middle of July. Vigorous, hardy, very productive.

28. **KIRTLAND'S MARY.**—Large, round, red on yellow ground; firm, rich, juicy, sweet, very high flavored. Strong grower, very prolific. First of July.

29. **KIRTLAND'S MAMMOTH.**—Mammoth size, clear yellow, marbled with rich red; juicy, sweet, high flavored. Moderately productive. Last of June.

30. **KNIGHT'S EARLY BLACK.**—Large, black, tender, juicy, rich. Very productive. Last of June.

31. **LARGE HEART-SHAPED BIGARREAU.**—Large, dark, shining brown, rich, and excellent. Vigorous, spreading—middle of July.

32. **MONSTREUSE DE MEZEL.**—Very large, dark brown; vigorous, late—middle of July. New—French.



Fig. 34.—KIRTLAND'S MARY.

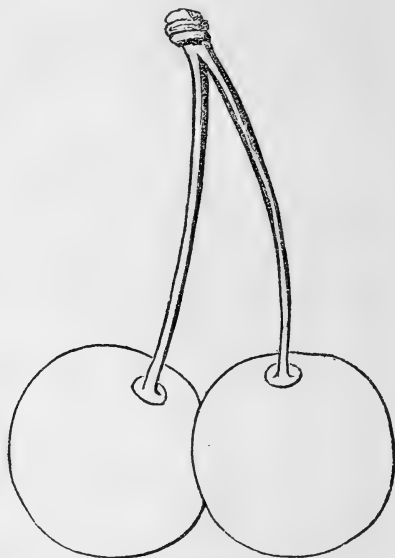


Fig. 35.—MONSTREUSE DE MEZEL.

33. **MANNING'S MOTTLED.**—Large, amber shaded, tender, sweet, delicious. Vigorous and productive. End of June.

34. **MAY DUKE.**—An old and excellent sort; large, dark red, juicy, sub-acid, rich. Hardy and fruitful—fine for dwarfs and pyramids. June and July.

35. **MONELLO, ENGLISH.**—Large, dark red, nearly black; juicy, sub-acid, rich. Tree small and slender. August. Valuable.

36. **PONTIAC.**—Large, dark, purplish red, juicy, sweet, agreeable. Last of June. Tree vigorous and productive.

37. **POWHATAN.**—Medium, rich purplish red, marbled, juicy sweet, pleasant. Middle of July. Vigorous and productive.

38. **NAPOLEON BIGARREAU.**—Largest size, pale yellow and red, juicy and sweet. Vigorous grower and enormous bearer. First of July.

39. **RED JACKET.**—Large, light red, juicy, good flavor. Middle of July. Hardy, very productive.

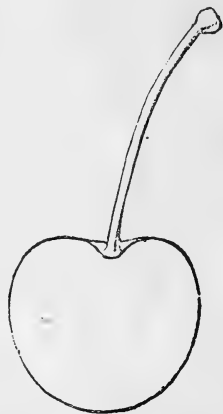
40. **REINE HORTENSE (Monstreuse de Bavay).**—Large, bright, juicy, delicious. Tree vigorous and bears well. Good for pyramid—new—French.

41. **TECUMSEH.**—Large, reddish purple, juicy, sweet, not high flavored. Middle of July. Vigorous and hardy.

42. **TRADESCANT'S BLACK HEART.**—Fig. 36.—**NAPOLEON BIGARREAU.** Very large, black, firm, juicy, good. Tree vigorous, a great bearer. Last of July.

43. **SPARHAWK'S HONEY.**—Medium, light, red, sweet, and delicious. Tree vigorous, pyramidal, productive. Last of July.

44. **WHITE FRENCH GUIGNE.**—Large, creamy white, tender and melting, sweet. Not attacked by birds, as red and black cherries are. Vigorous and very productive. Middle of July.



Mr. MORRIS BAISLEY, of Westchester, Westchester Co., N. Y., has succeeded in introducing an entirely new variety of the cherry, which ripens in September—months after all the other kinds have disappeared. It is of good size, rich orange color, firm, crisp flesh, with a very fine flavor. We regard it as a rare curiosity.—*Life Illustrated*.

The winter of 1855-6 was remarkably severe upon most kinds of fruit-trees, and in some sections the less hardy kinds were almost entirely destroyed.

Mr. A. V. BEDFORD, of Paris, Ky., has furnished the *Valley Farmer* with some facts showing the effect of frost on the different varieties of the cherry, from which we gather that his Early Purple Guigne, Knight's Early Black, Belle de Choisy, May Duke, Late Duke, Reine Hortense, Buttner's Yellow, Manning's Mottled, Coe's Transparent, Rockford Bigarreau, and Belle de Orleans have all proved hardy. Downer's Late Red, White French, Guigne, and Napoleon are severely injured. Black Tartarian, Elton, Bauman's May, and Holland Bigarreau are killed to the snow line. Tradescant's, or Elkhorn, Burr's Seedling, and Governor Wood are entirely killed. Something may have been owing somewhat to situation, soil, or culture in producing these effects; but they are stated to have been contiguous, and supposed to have been subject to the same conditions and treatment.

ADDITIONAL VARIETIES

Which have been recommended as "good," "excellent," etc., by cultivators and societies, many of which are doubtless worthy of general cultivation:

Adam's Crown,	Duchess of Padua,	Marvel of September,
American Heart,	Elliott's Favorite,	Ohio Beauty,
Anne,	Florence,	Plumstone Morello,
Aredhuke,	Hoadley,	Proudfoot's Seedling,
Atwater's Elizabeth,	Hovey,	President
Belle de Orleans,	Holland Bigarreau,	Rivers' Amber,
Caroline,	Hildesheim Bigarreau,	Robert's Red Heart,
Carmine Stripe,	Imperial Morello,	Rumsey's Late Morello,
Christiana,	Jeffries' Duke,	Shannon,
Conestoga,	Kirtland's Logan,	Sweet Montmorency,
Cumberland,	—— Large Morello,	Vail's August Duke,
Davenport's Early,	—— Brandt,	Walsh's Seedling,
Doctor,	Keokuk,	Waterloo,
Downing's Champagne,	Leatherstocking,	Wilkinson.
D'Esperin,		

Chapter Six.

THE CURRANT.

THIS fruit rejoices in a moist, cool climate, and yet, with proper cultivation, is made to succeed admirably in most parts of our country.

The currant is easily raised, and is a most valuable fruit. Its pleasant, acid flavor makes it a favorite with all classes, and the great variety of modes in which it can be served up, together with the season of its ripening, renders it almost indispensable.

The currant is best propagated by cuttings. These should be ten or twelve inches long, of the straight and firm last season's growth, and should be cut just below their union with the old wood. With a sharp knife cut away all the buds from that portion of the cutting designed to be under ground, leaving only two or three buds above the surface. In this way the growth of suckers may be prevented. The cuttings should be obtained and set as early in the spring as it is possible to get the ground in readiness.

The soil should be deep, mellow, and rich. The cuttings should be inserted about one half their length into the earth, if they are long, or two thirds if short, by means of a dibble or sharp instrument, and the loose mold pressed firmly around them with the hand. They should then have a good mulching of old straw or leaves, or other suitable material, to the depth of three inches or more. The cuttings should be ten or twelve inches apart, in rows two feet distant.

In the following spring they may be transplanted. Make the rows wide enough apart to admit of cultivation with a plow, and put the plants one yard apart in the rows. Remove all suckers, if any appear, and allow no branches nearer than one foot to the ground. Prune the head to the form of a tree. If desirable, it can be trained to a trellis, to suit the taste of the cultivator. Every

spring cut away the three-year-old branches, thus keeping the necessary supply of new bearing wood. Each fall the mulch of the preceding summer should be forked in, and a heavy supply of good manure added. The currant can not easily be overfed.

The rows should be renewed once in five or six years, as the young and vigorous trees will be more productive than the old, and will yield better and larger fruit.

The currant may be easily trained against a wall or fence in the following manner: When a cutting just transplanted begins to grow, rub off all the shoots on the stem except such as may be necessary to give it the proper shape—say three, one for a vertical position, and the others for laterals. In the spring following, train these in the direction desired, and observe the same care in regard to side shoots, allowing only a sufficient number to grow to give the tree a proper form. And so on, from year to year.

An annual pruning and shortening in is necessary to insure good fruit.

VARIETIES.

1. **BLACK NAPLES.**—A very superior black currant, of fine flavor, bearing the largest-sized berries in large clusters. Very productive.

2. **KNIGHT'S SWEET RED.**—Mild and pleasant, resembling the White Dutch in quality, and the Red Dutch in color, but not so deeply colored.

3, 4. **RED AND WHITE DUTCH.**—Good size and mild flavor, and quite productive.

5. **MAY'S VICTORIA.**—Known also as Houghton Castle. Bunches very long, berries large and pale red. A good bearer. Fruit hangs long on the bushes.

6. **CHERRY CURRANT.**—The largest of all red currants. Quite sour, branches short. Vigorous grower and abundant bearer. Very valuable.

7. **WHITE PEARL.**—New—described as growing in long bunches, and being of a pearl color.

8. **WHITE GRAPE.**—A very large, white sort; bunches large,

berries closely set; pale, transparent. . Very distinct from other white sorts. A great bearer.

9. RED GRAPE.—Long branches; berries large, light red. Good grower, good bearer.

10. CHAMPAGNE.—New variety, color light pink.

11. PRINCE ALBERT.—A very large, light red; late, distinct variety; an immense bearer, very valuable.

12. MISSOURI LARGE FRUITED.—Large, violet fruit. Immense bearer. Grows to large bushes.

13. MISSOURI SWEET FRUITED.—Blue color, sweet, late. Great bearer, large bush.

14. SILVER STRIPED.—Red fruit, silver-stripe foliage; curious.

The pomological societies recommend specially the Black Naples, May's Victoria, Red and White Dutch, and White Grape. The Red and White Dutch have been extensively tested throughout the Northern, Central, and Western States. The Missouris promise to be valuable.

Chapter Seven.

THE GOOSEBERRY.

THE gooseberry is propagated in the same manner, and requires much the same general culture as the currant—excepting that, as it is a gross feeder, it requires a deeper and richer soil.

Trench two feet deep, and fill in the bottom a heavy dressing of fresh stable manure. Place the rows five feet apart, and the trees three feet apart in the rows. Keep off all shoots from the roots, and trim to a single stem, from twelve to thirty inches high, and keep the head well thinned out, but do not cut off the ends of the young shoots. Free access of air and light is necessary, but no shade. A writer in the *Vermont Chronicle*, in reference to the high-bush mode of training, says:

“I have one six feet high. This places your fruit out of the way of hens, and prevents the gooseberry from mildewing, which often happens when the fruit lies on or near the ground, and is shaded by a superabundance of leaves and sprouts. It changes an unsightly bush, which cumpers and disfigures your garden, into an ornamental dwarf tree. The fruit is larger, and ripens better, and will last on the bushes, by growing in perfection, until late in the fall.”

MILDEW.—The chief drawback to the culture of the gooseberry in this country is, that the fruit is so liable to mildew. This is supposed to be caused by a superabundance of heat, and too little moisture in the atmosphere. Good culture will, in an eminent degree, remedy this evil.

High, open culture, free manuring, and copious mulching are the best known remedies. Sawdust, or spent tan bark, makes a good mulch for the gooseberry. It should be applied liberally—to a depth of at least four to six inches. Hay, or other mulching material, sprinkled occasionally with common salt, is likewise good.

Hog manure, to the depth of three inches beneath each tree, has been found highly beneficial. Sprinkling with ashes when the dew is on has had a good effect on the fruit to prevent mildew. Frequent sprinkling with soap-suds, early in the spring, has a fine effect on the growth of the bush, and is a good preventive of mildew.

To prevent gooseberries from mildewing, remove the dirt from about the roots, thickly mulch with salted meadow hay, and then cover again with earth. This mode is recommended by R. T. HAINES, Elizabethtown, N. J.

VARIETIES.

1. HOUGHTON'S SEEDLING.—This is inferior in size to many of the English varieties, but has been found to be less affected with mildew than any other; it is also a most excellent fruit, and generally productive, and for these reasons is perhaps more worthy of general cultivation, especially at the West, than any other variety. It was produced by Mr. ABEL HOUGHTON, of Lynn, Mass., and is a cross probably between some English variety and our native fruit of the woods. Its flavor is sweet and delicious, and in cooking qualities stands unrivaled. Color pale red.

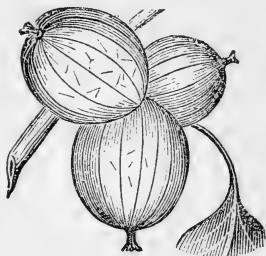


Fig. 37.—HOUGHTON'S SEEDLING.

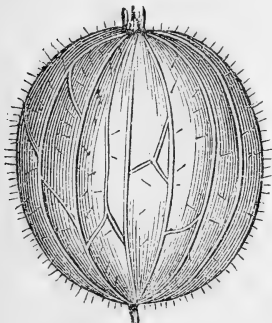


Fig. 38.—CROWN BOB.

2. CROWN BOB.—Very large, red fruit; spreading branches; flavor of the best.

3. ROARING LION.—Branches drooping; fruit large, red, and hangs long.

4. SHEBA QUEEN.—Large, white fruit, good flavor, erect branches.

5. WHITESMITH.—Large, often over an inch in length; very productive; color white and bluish. Very erect habit.

ELLWANGER and BARRY name the following in their catalogue as being free-growing and productive varieties, well adapted to our climate:

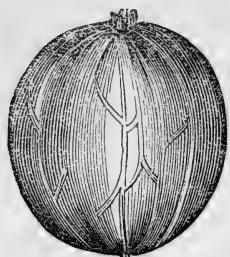


Fig. 39.—WHITESMITH.

RED.—Ashton, Bogart, Companion, Crown Bob, Emperor, Echo, Ironmonger, Lancashire Lad, Melbourne, Major Hill, Prince, Red Champagne, Royal Forester, Roaring Lion, Warrington.

WHITE.—Fleur de Lis, Queen Caroline, Queen of Sheba, Smiling Beauty, Whitesmith, White Ostrich, White Eagle.

GREEN.—Green Wood, Green Laurel, Conquering Hero, Leader, Lively Green, Green Willow, Green Ocean, Profit.

YELLOW.—Bunker Hill, Broom Girl, Cheshire Cheese, Golden Drop, Yellow Lion.

The American Pomological Society has recommended the following, as promising well, for general cultivation:

Crown Bob,	Early Sulphur,	Ironmonger,
Green Walnut,	Houghton's Seedling,	Warrington,
—— Gage,	Red Champagne,	Woodward's Whitesmith
Laurel,		

Twelve good gooseberries—free growers and good bearers: RED—*Crown Bob*, *Warrington*, *Lancashire Lad*, *Roaring Lion*, *Echo*, *Companion*. WHITE—*Whitesmith*, *Queen of Sheba*. YELLOW—*Golden Drop*, *Bunker Hill*. GREEN—*Green Ocean*, *Green Willow*.—*Horticulturist*.

We think very highly of *Houghton's Seedling* gooseberry. It is much inferior in size, beauty, and flavor to the large English varieties, such as *Crown Bob*, *Warrington*, *Whitesmith*, etc., but then it is more at home in our climate. It grows freely, propagates easily, bears most abundantly, and the fruit is comparatively, though not wholly, exempt from mildew.—*Horticulturist*.

Chapter Eight.

THE GRAPE.

THE limits and design of this little work will not permit a lengthy chapter on the culture of the grape, which is becoming quite extensive in this country, both as a dessert fruit and for the manufacture of wine. Most persons who design to cultivate vineyards, as well as those who will enter into the Hot-House and Cold-Vinery culture, will seek information from some of the more elaborate treatises on the subject. But the common out-door garden culture is well worthy the attention of all who have room for a vine to grow; and it will as richly reward the labor and care bestowed upon it as any other kind of fruit.

The following parts of a chapter on the grape, in PARDEE'S work on the STRAWBERRY, embrace so nearly what should be said on the garden culture of that fruit, that no apology is offered for introducing and adopting them here:

"The grape is easily and cheaply raised, but good cultivation is altogether the best economy.

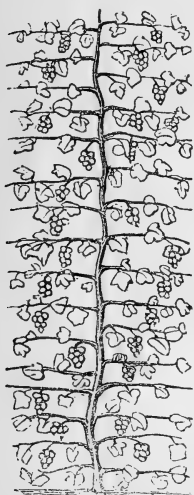


Fig. 41.—SPUR TRAINING.

It is easily propagated from cuttings. We have found it the best way to prune off our cuttings early in February, two feet in length, bury them in a bundle four to six inches deep in the ground immediately, and for this purpose we choose the warmest weather in the month.

"Let them be in the ground till the warm weather in the fore part of May [in New York—farther southward—earlier]; we then take them up and plant them in a sloping position, in a somewhat

shaded situation, leaving the upper bud a few inches above the ground. In this way almost every cutting will surely grow, and after a year or two should be carefully transplanted into the vine border.

"The preparation of this vine border is an important process in grape culture in private gardens. It should be made from four to six feet wide, and two to three feet deep, and be composed of a liberal mixture of limestone, or old plaster or mortar, bones, leather parings, hair, ashes, and strong, well-rotted manure, well mixed with the soil.

"A calcareous soil or gravelly loam is best for the grape, and should be well drained and warm. It is somewhat difficult in wet clay lands to raise good grapes, unless the vine border is carefully prepared. Soap-suds and wash from the house are favorable for the grape; and we have known some plants succeed well that were placed immediately under the spout of the sink. For vineyard culture, the nearer the process approximates to the one described above, by trenching and enriching, the better.

"Every plant should be thoroughly pruned down to two or three leading shoots; and after these, cover the trellis or stakes as extensively as you wish; then the rule in pruning is, every year, from December to first of February, fearlessly to cut back all of the last year's growth, so far as to leave only two eyes. It is also desirable, after the grapes are beginning to fill in June, to pinch back the terminal bud of every branch, and thus check its growth, and throw back its sap, to ripen the fruit and mature the wood. By pinching back, we mean to pinch off, with the thumb-nail and forefinger, the end of every bearing branch, and we then cut out all the superfluous little shoots and suckers.

"The vine is composed for the greater part of potash, lime, and carbonic acid, and therefore a frequent application of lime, ashes, and soap-suds is beneficial. It has been asserted that tartaric acid is a valuable specific for the fruit, but of this we have no personal knowledge.

"The grape should always be grown in the warmest and most sheltered situation, so that the fruit may ripen well before frost. The south side of a house or southern slope of a hill-side should be chosen.

"In some places the mildew is troublesome to the grape, but

sulphur sprinkled liberally on its first appearance will usually check it at once. There is also a kind of snail slug, which often destroys the leaves in a few weeks. These can easily be destroyed by showering the vines two or three times with strong soap-suds from the wash.

"Our nurserymen have many kinds of the grape on their lists for open-air cultivation, but we are not quite sure that the *Isabella* and *Catawba* do not comprise substantially the good qualities of all. The only complaint against them seems to be, they will not in all situations and all seasons at the North ripen before the frost.

"The *Clinton* is two weeks earlier than the *Isabella*, but it is not near so large or good.

"The *Catawba* is still later than the *Isabella*, and requires a warm soil and sheltered location to perfect its fruit, and then it is rich and truly delicious.

"We are in great want of a new seedling grape, equal or superior to the *Isabella* and *Catawba*, and decidedly two or three weeks earlier. We often have such announced, but they do not always prove satisfactory."



Fig. 42.—THE CATAWBA.

The above is all that need be said of the grape culture in general. It is sufficiently comprehensive for the wants of all that class who desire to cultivate a few vines for home uses; and for those who are entering into the culture more extensively, larger treatises will be required.

The *Concord*, the *Diana*, the *Clinton*, and others, have been brought forward as substitutes for the *Catawba* and *Isabella*, but the best cultivators continue to rely upon the latter. The time may come, however, when, by crossing some foreign variety upon the native grape, a new variety will be produced superior to either. We must bide the time.

The N. W. Pomological Convention, held at Chicago, 1854, recommends the *Isabella* as the best for general cultivation throughout the Northwest, but that the *Catawba* is superior in those localities where it will ripen.

TRAINING.

Most persons prefer a trellis or framework for the vine to run on



Fig. 41.—THE ISABELLA.

laterally. This is built by planting posts—say six or seven feet high, and the same distance apart, and nailing upon them boards of the required length, and from three to four inches broad. There should be four of these in number—one at the top, one ten inches from the bottom, and the remaining two at equal distances between. To these the vine should be trained.

Another good mode, and one which is practiced in most vineyards, is to train the vines to single perpendicular stakes—say six or seven feet high, and set in rows five or six feet apart. This gives ample room for free admission of air and sunshine, as well as for good, clean cultivation.

Chapter Nine.

THE NECTARINE.

THE nectarine in its nature and habits very much resembles the peach, from which it differs but little, but mostly in the smoothness of its skin. The same culture and general management is requisite for both. It is peculiarly liable to the attacks of the curculio, and on that account full, well-ripened crops are rare. Yet it is usually a prolific bearer, and, could the ravages of its great enemy be prevented, it would soon become a common and highly valued fruit.

VARIETIES.

Those most worthy of general cultivation are—

1. **EARLY VIOLET.**—Medium size, purplish red, very fine flavor. Last of August.

2. **ELRUGE.**—Medium, greenish yellow, fine flavored. First of September.

3. **DOWNTON.**—Medium, pale green and violet; excellent.

The above have been recommended by the American Pomological Society as worthy of general cultivation. The following are also regarded by some societies and cultivators as equally worthy of attention:

4. **BOSTON.**—Large, handsome, yellow and red.

5. **HUNT'S TAWNY.**—Small, dark red, early.

6. **EARLY NEWINGTON.**—Large, pale green and red, juicy, rich.

7. **HARDWICKE SEEDLING.**—Small, orange red, juicy. August.

8. **LATE MELTING.**—White and red, very late.

9. FRENCH YELLOW.—Medium, greenish yellow, rich. September.

10. ORANGE.—Large, orange; rich and fine. September.

11. RED ROMAN.—Greenish red; rich and good. September.

12. LARGE EARLY VIOLET.—Larger than No. 1, but not so good.

In the full belief that the curculio—the scourge of the fruit-garden—will yet be conquered, the reader is urged to plant a fair assortment of nectarines, as well as other fruits.

Chapter Ten.

THE PEACH.

THE peach, in all climates suited to its growth, is the most common and easily obtained of the whole family of fruits. It is to be found in the orchard and door-yard of every one who attempts the

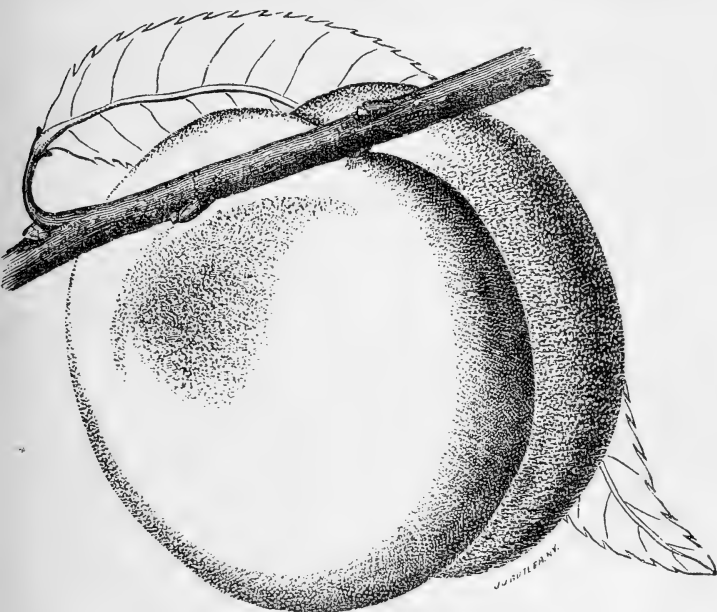


Fig. 43.—THE PEACH.

cultivation of fruits at all—and yet how little care and attention is bestowed upon it! It grows and yields its annual supply with

very little culture; yet extra labor and skill are always with it most amply rewarded in its increased size, excellence, and beauty.

The peach will usually bear in quite cold weather, even to 20 or 25 degrees below zero, unless the buds have been previously swollen by warm weather in the fall, or unless succeeded immediately by warm sunshine. Trees that have grown in improper soil, or are otherwise in an unhealthy condition, will be more liable to have their fruit killed by frost.

The chief food of the peach are lime, potash, and bone-dust; consequently on soils where these are naturally in abundance, or where they are plentifully supplied, may it be expected to produce the largest crops of healthy and vigorous fruit.

Trees thus fed, and kept properly trimmed and cultivated, will live longer than those not so favorably circumstanced.

Peaches are easily propagated from the seed. If the stones or pits be properly planted in the fall, they will usually sprout in the spring. To succeed well, take the stones before they have become dry, and cover them in a pile to a depth of four to six inches, in light, sandy soil. Here they will freeze and crack open during the winter, and on the return of spring, and by the time the ground can be made fit to receive them, they will be found to have germinated. Take them carefully up, and plant in rows four or five feet apart, and ten or twelve inches in the row, covering them about two inches deep with rich pulverized soil. By keeping the ground well cultivated during the summer, and clear of all grass and weeds, they will reach a height of three to five feet by the first of Sept.

A few of the stones, when raised in the spring, will be found not to have cracked open; these must be opened by using a hammer, taking care to strike them on the edge, and not on the end, or flatwise; otherwise they will be injured. Plant these in rows separate from the others, as it is desirable to have all in the same rows as near one size as possible—and those will not be likely to grow as large as the others.

Those trees which have reached a proper growth should be budded the same year—in August or early September. Many transplant the seedling trees, either because it is considered too expensive to procure the budded ones, or because they are thought to be as valuable, or from want of proper reflection on the subject. It is true that, in some instances, nearly the same fruit as that from the

parent tree is thus produced; this is oftener the case with the yellow-fleshed varieties than any others. Yet it is far better to plant only the best, even at four times the cost, than to plant the seedling tree. He who does so will surely gain in the end, by the superior excellence of his crop, and the consequently higher price for it in the market. For description of the process of budding, see *Appendix*.

The following note to ELLWANGER & BARRY'S Catalogue compresses almost the whole subject of PEACH CULTURE into a nutshell:

"1st. Keep the ground clean and mellow around the trees, and give it an occasional dressing of wood-ashes. 2d. Keep the heads low—the trunk ought not to exceed three feet in height. [One to two feet is better, we think.] 3d. Attend regularly every spring to pruning and shortening the shoots of the previous year's growth. This keeps the head round, full, and well furnished with bearing wood. Cut weak shoots back one half, and strong ones one third; but see that you leave a sufficient supply of fruit-buds. Sickly and superfluous shoots should be cut out clean."

DESCRIPTIVE LIST.

1. BERGEN'S YELLOW.—Very large, orange, red in the sun; flesh yellow, juicy, and fine-flavored. One of the best of yellow peaches, but a poor bearer. Middle of September.—*Ellwanger and Barry's Catalogue*.

2. COOLIDGE'S FAVORITE.—A most beautiful and excellent peach; skin white, delicately mottled with red; flesh pale, juicy, and rich; tree vigorous and productive. Middle to end of August.—*E. and B.*

3. CRAWFORD'S LATE MELOCOTON. (Crawford's Superb.)—Really a superb yellow peach, very large, productive, and good. Last of September.—*E. and B.*

4. EARLY YORK.—Medium size; on young, thrifty trees, large, greenish white, covered in the sun with dull purplish red; flesh juicy, rich, and excellent; tree a fair grower and very prolific. Middle of August.—*E. and B.*

5. LARGE EARLY YORK.—A large and beautiful variety; white,

with a red cheek; flesh juicy and delicious; tree vigorous and productive. End of August.—*E. and B.*

6. GEORGE IV.—Large, white, with a red cheek; flesh pale, juicy, and rich; tree vigorous, and bears moderate crops of the highest quality. End of August.—*E. and B.*

7. GROSSE MIGNONNE.—Large, dull white, with a red cheek; flesh pale, juicy, with a rich vinous flavor; a free grower and good bearer. End of August.—*E. and B.*

8. MORRIS WHITE.—Medium size, dull, creamy white, tinged with red in the sun; flesh white to the stone, juicy, and delicious; tree a moderate bearer; highly prized for preserving, on account of the entire absence of red in the flesh. Middle of September.—*E. and B.*

9. OLD MIXON FREESTONE.—Large, greenish white and red; flesh pale, juicy, and rich; tree hardy and productive; a standard orchard variety. Middle of September.—*E. and B.*

The above have been recommended by the American Pomological Society for general cultivation. The following additional varieties are given by the editor of the *Illustrated Annual Register* for 1856:

10. EARLY ANNE.—Small, round, greenish white. Tender, slow growth—early.

11. EARLY TILLOTSON.—Medium, dark red, juicy, high-flavored. Great bearer.

12. COLE'S EARLY RED.—Medium, red, not first quality; tree productive.

13. EARLY NEWINGTON FREESTONE.—Medium, white and red, juicy, rich, fine.

14. WHITE IMPERIAL.—Large, white, juicy, excellent flavor. Fine at the North, often worthless South.

15. BREVOORT.—Large, deep red, firm, sweet, rich.

16. BARNARD.—(Yellow Alberge.)—Large, deep yellow, flavor fine; hardy and productive.

17. JACQUES' RARERIFE.—Very large, yellow, shaded with red; flesh deep yellow, red at the stone, good flavor.

18. NIVETTE.—Large, oval, yellowish green, juicy, melting, and rich.

19. PRESIDENT.—Large, very downy, yellowish white, with red cheek; red at the stone, juicy, fine flavor.

20. RED CHEEK MELOCOTON.—Large, yellow, deep red cheek, juicy, good flavor.

21. DRUID HILL.—Large, roundish, juicy, rich, excellent, late.

22. OLD MIXON CLING.—Large, yellowish white, red cheek, juicy, rich, excellent.

23. LARGE WHITE CLINGSTONE.—Large, white, red cheek; juicy, sweet, rich, and high-flavored.

24. OLD NEWINGTON.—Resembles Old Mixon.

25. LEMON CLING.—Large, deep yellow, red cheek, firm, rich, vinous, sub-acid, productive, hardy.

26. BLOOD CLING.—Large, downy, purplish red; flesh red, firm, good for cooking.

27. HEATH CLING.—Very large, white, juicy, melting, sweet, rich, excellent.

To which are added, to make up a list of fifty of the very best, the following:

28. YELLOW RARERIFE.—Large, orange yellow, rich, juicy; free-stone.

29. WARD'S LATE FREESTONE.—Large, sweet, and delicious.

30. COLUMBIA.—Large, yellow, excellent, hardy.

31. PRINCE'S RED RARERIFE.—Large, yellow, rich, productive.

32. HYSLOP.—Large, melting, late, productive; cling.
33. MALTA.—Large, green, delicious.
34. LATE ADMIRABLE.—Large, yellow green, juicy, delicious.
35. VANZANDT'S SUPERB.—Medium, white, red cheek, juicy, sweet, fine.
36. WALTER'S EARLY.—Large, white, red cheek, juicy, sweet, fine flavor.
37. SCOTT'S NONPAREIL.—Very large, yellow, fine.
38. SNOW PEACH.—Beautiful white—for preserving.
39. HAINES' EARLY.—Large, white and red; hardy, productive.
40. ORCHARD QUEEN.—Large, yellow and red, melting—new.
41. EARLY SWEET WATER.—Medium, tender, rich—for the South.
42. BELLEGARDE.—Large, green, red cheek, juicy—freestone.
43. ROYAL GEORGE.—Medium, white, red cheek, juicy, productive.
44. SKINNER'S SUPERB.—Yellow freestone—good South.
45. TIPPECANOE.—Large, yellow and red, juicy—clingstone.
46. INCOMPARABLE.—Large cling—good at the South.
47. WASHINGTON CLING.—Medium, yellow green, juicy, rich.
48. ST. LOUIS.—Large, yellow, good—Western.
49. SMOCK.—Large, orange, juicy, rich—freestone.
50. PRINCE'S PARAGON.—Large, freestone, juicy, sweet, rich.

To the above list might be added perhaps as many more—some of them well tested in different localities and highly recommended, and some as yet but partially tested, but promising well.

List of the best ten peaches for a succession at the South, as furnished for the *Horticulturist* by WM. N. WHITE, of Columbus, Ga. :

1. COLUMBUS JUNE.—Medium, excellent. June 20th.
2. WALTER'S EARLY.—Bears abundant crops. July 1st.
3. GROSSE MIGNONNE.—Best freestone known South. July 8th.
4. CRAWFORD'S EARLY.—One of the best—hardy. Middle of July.
5. BELLE DE BEAUCAIRE.—Thrifty—one of the best. Last July.
6. CRAWFORD'S LATE.—Magnificent, productive. Early in Aug.
7. NEWINGTON CLING.—One of the best of clings. August 10.
8. YELLOW BLANTON CLING.—Best of clings. Reproduces itself from the seed.
9. WHITE ENGLISH CLING.—Best for preserving. Very valuable.
10. BOUGH.—First of October. Best of its season. Freestone.

To which add—*Early York, Early Admirable, George IV., Bellegarde, Late Admirable, Late Red Rareriipe, President, Lemon Cling, Tippecanoe, and November Cling.*

The peaches recommended by the N. W. Pomological Convention, at Chicago, are the following:

Crawford's Early,
Early Bernard,
Early York,

White Cling,
Old Mixon Free,
Early Strawberry,

Crawford's Late,
George IV., and
La Grange.

SOIL.

A rich, deep, mellow loam, with a slight admixture of sand, is the very best for the growth and perfection of the peach. A light, sandy soil will produce a fine growth, and generally fair fruit; but trees in such soils are much more liable to the attacks of the peach grub than in other soils. We have seen fine, handsome young trees almost totally destroyed by them in one or two years, while trees but a short distance off, in less sandy soils, were but slightly injured.

INSECTS AND DISEASES.

THE PEACH-WORM—above alluded to, is the worst enemy of the peach-tree. It is the larva of a waspish-looking miller or butterfly,

which, during the summer, deposits its eggs in the bark of the tree. These soon hatch whitish-looking worms, which make their way between the bark and the wood, and, if permitted to continue their depredations, will seriously injure, and sometimes entirely destroy, the tree.

To destroy them, they must be sought out with a knife or other sharp instrument, by cutting away the outer bark, and ejecting them from their holes, which is easily done. Their presence is almost always indicated by gum, sometimes in large quantities, on the surface, at or about the hole in which the depredator may be found. Dig away the earth from about the root of the tree, a few inches below the surface; and, after scraping off the decayed bark and killing the worms, apply a bucketful of slaked lime or leached ashes, or both. Do not neglect to make a thorough search for the rascals at least once every spring, examining carefully every tree. The application of lime and ashes is a very effectual means of prevention; put it on in the spring, and allow it to remain till autumn, when it may be spread out to cover the surface for several feet, and worked in with other fertilizers.

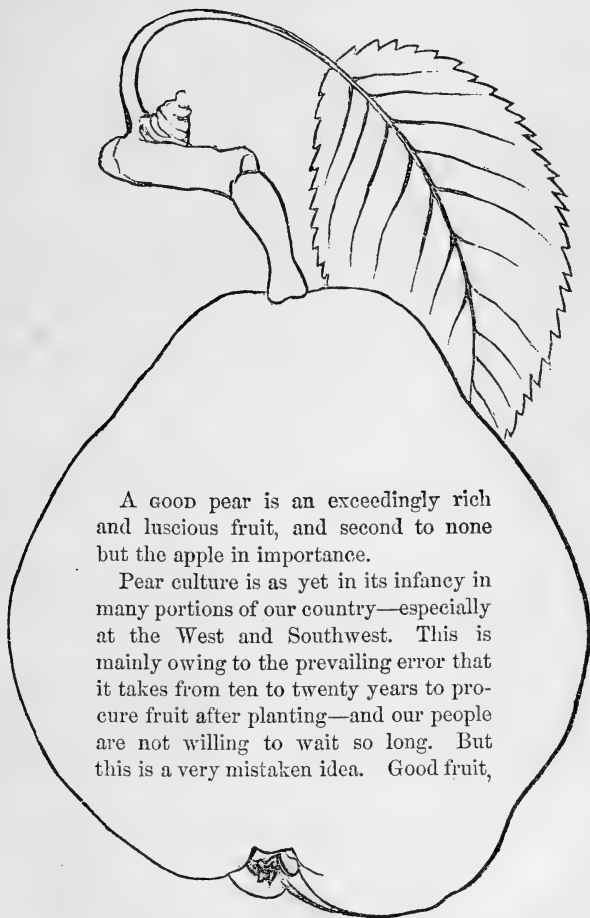
Some varieties of the peach are subject to the *mildew*. This may be destroyed by sprinkling with soap-suds, or with an intermixture of lime-water and soap-suds. Sulphur has also been applied with success.

THE YELLOWS.—This disease in peach-trees has never yet been fully understood. It is mostly considered to have its origin in general bad management—neglected culture, exhaustion, overbearing, etc. DOWNING strongly recommends shortening-in as a prevention, and most pomologists concur in the opinion that long-continued good culture and care are the surest means of preventing this disease. As a remedy, cut down and utterly exterminate all trees that may be attacked; as the disease is a contagious one, and it is better to lose a few trees at the beginning than to run the risk of losing all by delay.

LEAF CURL.—The disease known as the Curl of the Leaf, by which, in the spring, the leaves will curl up, and finally fall, is occasioned by the puncture of a small insect called the plant louse. A good remedy for this is strong soap-suds, with a decoction of tobacco-juice, applied as soon as the leaves begin to curl.

Chapter Eleven.

THE PEAR.



A good pear is an exceedingly rich and luscious fruit, and second to none but the apple in importance.

Pear culture is as yet in its infancy in many portions of our country—especially at the West and Southwest. This is mainly owing to the prevailing error that it takes from ten to twenty years to procure fruit after planting—and our people are not willing to wait so long. But this is a very mistaken idea. Good fruit,

Fig. 44.—THE PEAR.

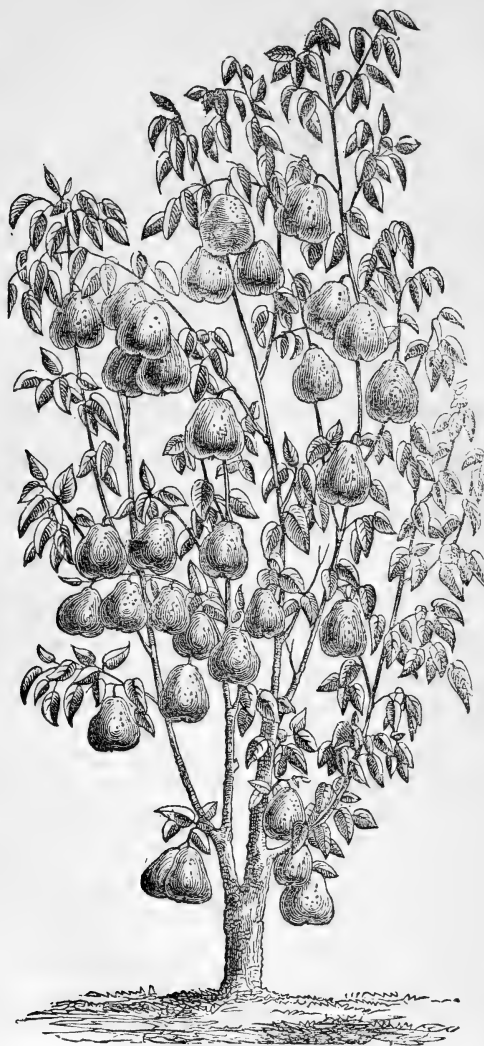


Fig. 45.—DWARF PEAR.

in moderate quantities, can be obtained from the planting of the pear, as soon as from the apple, or even the peach. A gentleman at Albany, N. Y., obtained a fine crop of pears in two years from the nursery, and three from the bud, on his Bartlett, White Doyenne, and Gray Beurre trees; in one year longer his Louise Bonne de Jersey and Beurre Diel trees fruited finely; and in another, the Vicar of Winkfield. A number of varieties, not only on quince, but on pearstocks, will bear largely in four to six years. The pear requires a rich, deep, loamy soil, with plenty of lime and the

phosphates in its composition. These must be supplied by free dressings of bone-dust and slaked ashes. Whole bones from the slaughter-house will answer where the dust can not be obtained. Iron filings and sweepings from the blacksmith's shop are very good to be worked in around and about the pear-trees.

Working the pear on quince has become quite popular among nurserymen of late years. With some varieties this mode answers well, but with others does not succeed at all. THOMAS, in his *Fruit Culturist*, gives the following list of those which succeed *best* on the quince:

Louise Bonne de Jersey,
Buerre Diel,
Duchess d'Angouleme,
Easter Buerre,

Buerre d'Amalis,
Vicar of Winkfield,
Long Green of Autumn,
Early Rousselet,

Stevens' Genesee,
Fortune,
Glout Morceau,
Chaumontelle.

He also gives a list of about thirty, which usually succeed equally well on the pear and quince stock.

Cultivators should be guarded against relying too much upon this mode of culture. For orchard culture, pear stocks are generally to be preferred. Those on quince roots are not apt to be so long-lived—they require more care and skill in pruning, and they also require a far higher culture. Yet there is this advantage with them—they generally come much more early into bearing, many varieties bearing quite freely at two and three years from the nursery.

The following on that point, from one of the latest as well as the most reliable authorities, is worthy of special attention at this time:

“While a very large number of varieties will take, and grow for a year or two finely, there are comparatively few that succeed for a series of years in continued vigor and productiveness, when grown on any stock but that of the pear; and while the cultivation is now very extensive on the quince root, we can not but fear that in eight tenths it will prove unprofitable to the grower; and in the remaining two tenths require equally as much care in supplying nutrition and pruning as a system of root-pruning when grown on pear roots. * * * * Orcharding with the pear on the quince, in the manner of most orcharding in this country, will never repay the first cost of the trees; but if trees are selected of

varieties known to have been long successful, and a system of culture pursued which shall meet the requirements of the fibrous roots of the quince, then may the grower look for profit and pleasure in the result.—*Elliott*.

There can be no doubt, however, but *with proper culture and skill in pruning*, dwarfing the pear on quince may, in very many instances, be made highly remunerative.

In orchard culture, or standard trees, the pear requires nearly similar pruning to the apple—the main thing being to prevent the branches from becoming too thick.

DESCRIPTIVE LIST.

CLASS I.—SUMMER.

1. MADELEINE. — Medium, smooth, greenish yellow, juicy, melting. Needs house-ripening. Erect and vigorous. July.

2. SUMMER DOYENNE—(Doyenne d'Ete.)—Small, yellow, red cheek, melting; bears very young. July.

3. OSBAND'S SUMMER.—Medium, yellow, red cheek, sweet, fine flavor, vigorous grower.

4. SKINLESS. — Small, yellowish green, juicy, and sweet; vigorous and productive. August 1st.

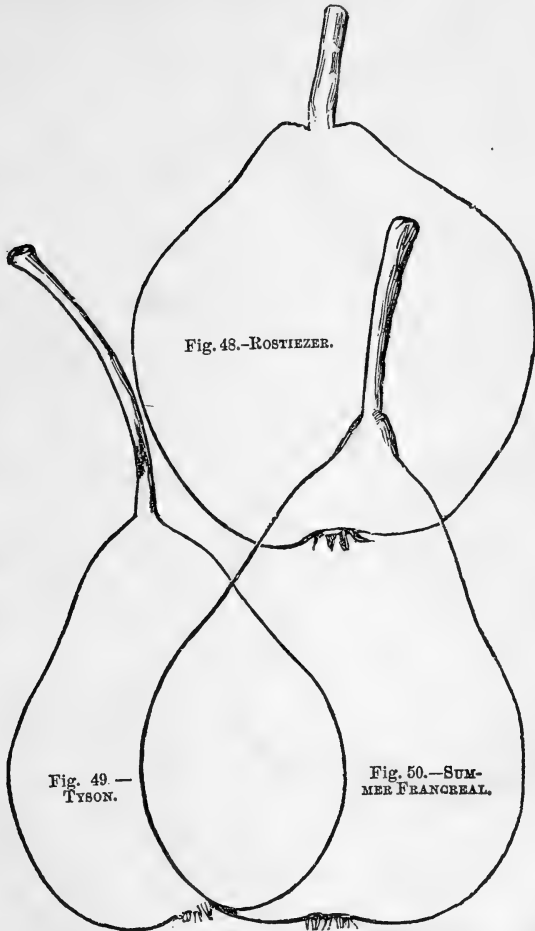
5. BLOODGOOD. — Medium, yellow russet; melt-

Fig. 46.—MAD-
ELEINE.

Fig. 47.—OSBAND'S
SUMMER.

ing; moderate growth. August.

6. ROSTIEZER.—Small, brownish green, juicy, melting, very sweet, highly perfumed flavor. Last of summer.



7. TYSON. Medium to large, bright yellow, red cheek, buttery

excellent. Vigorous, late in coming into bearing, but grows finely on quince, and bears soon. Last of summer.

8. BEURRE GIFFARD.—Medium, greenish yellow, tender, juicy, sweet; highly esteemed. August.

9. DEARBORN'S SEEDLING.—Small, clear yellow, melting, juicy; fine quality. Bears young. August.

CLASS II.—AUTUMN.

10. GOLDEN BEURRE OF BILBOA.—Medium, yellow, fine-grained, buttery, moderately rich.

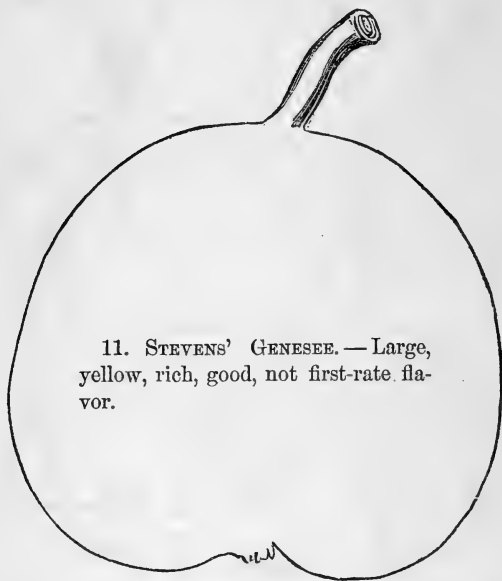


Fig. 51.—STEVENS' GENESEE.

12. BUFFUM.—Medium, yellow, reddish-brown cheek, buttery, sweet, fine flavor; growth erect, strong, healthy; very productive.

13. ANDREWS.—Medium, greenish brown, juicy, melting; very productive, and bears young. First of September.

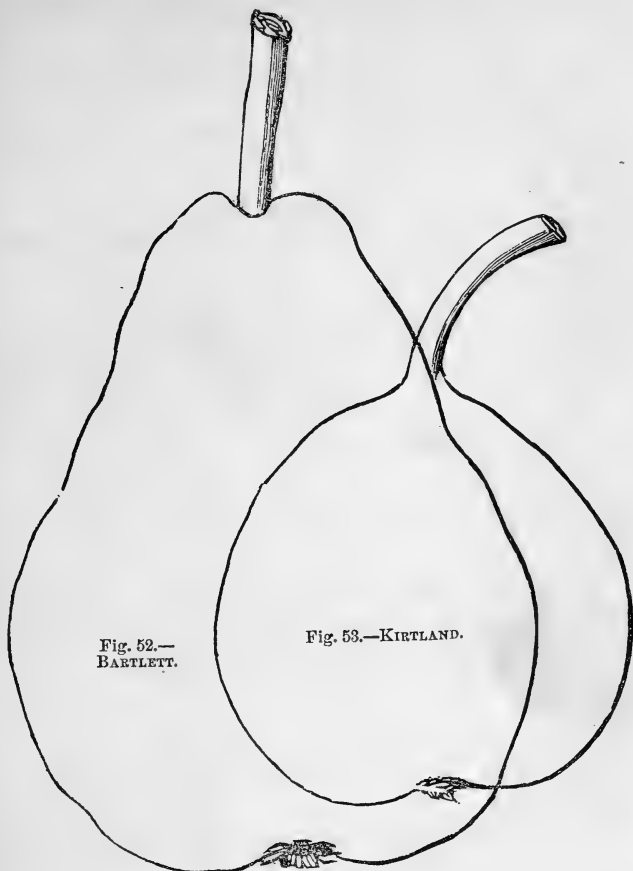


Fig. 52.—
BARTLETT.

Fig. 53.—KIRTLAND.

14. BARTLETT—(Williams' Bon Chretien.)—Large, clear yellow, tender, buttery, sweet; erect and thrifty—bears very young. First of autumn.

15. KIRTLAND.—Medium, greenish russet, buttery, melting, high-flavored.

16. SECKEL.—Small, brownish green, becoming rich, yellowish brown; sweet, melting, buttery, highly perfumed; the richest and highest flavored pear known. Growth slow, small, very productive.

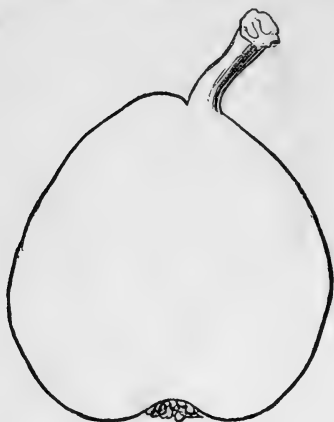


Fig. 54.—SECKEL.

17. FLEMISH BEAUTY.—Large, reddish brown russet, melting, juicy, sweet, rich, excellent, strong, healthy, productive.

18. HOWELL. — Large, pale yellow, melting, buttery; bears very young; always productive.

19. BUERRE D'ANJOU.—Large, greenish yellow, buttery, melting, rich, vinous, excellent. Fine, even bearer. Valuable.

20. DUCHESS D'ANGOULEME.—Very large, greenish yellow, rather coarse, melting, buttery, juicy. Vigorous—always best on quince.

21. GRAY DOYENNE.—Resembling the above, but smaller.

22. FULTON.—Small, dark cinnamon, buttery, rich, sprightly, agreeable. Hardy and productive. Valuable.

23. SHELDON.—Large, greenish yellow, russet, juicy, rich, excellent.

24. NAPOLEON.—Large, green, yellowish, very juicy, melting. Very productive, thrifty, hardy.

25. BEURRE BOSCH.—Large, deep yellow, juicy, buttery, rich, excellent. A regular, even bearer.

26. AUTUMN PARADISE.—Large, yellow orange, melting, buttery, rich, excellent flavor.

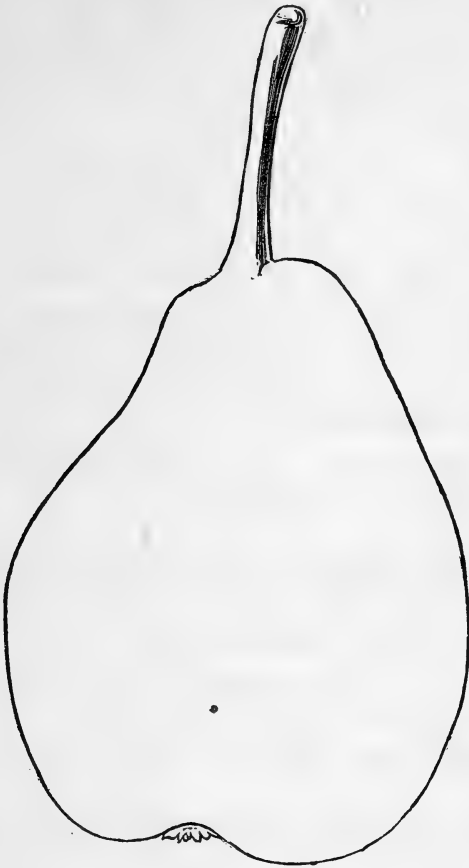


Fig. 55.—LOUISE BONNE DE JERSEY.

27. LOUISE BONNE DE JERSEY.—Large, yellowish green, brown-red cheek, buttery, melting, rich, very productive; grows finely on quince.

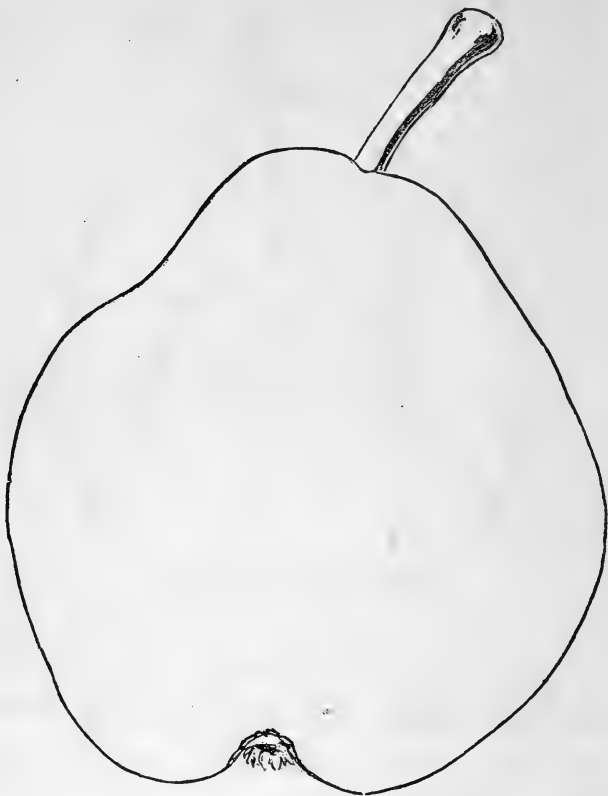
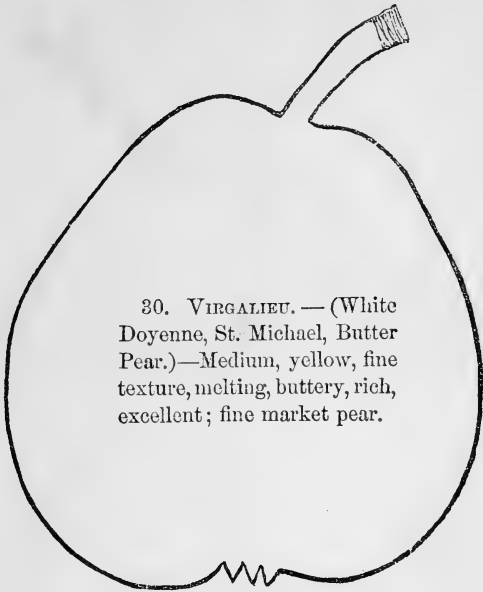


Fig. 56.—ONONDAGA.

28. ONONDAGA.—(Swan's Orange.)—Quite large, rich, yellow, slightly buttery, melting; flavor good, not first-rate. Strong grower, early bearer. Valuable.

29. BEURRE DIEL.—Large, dull yellow, rich, sugary, buttery, juicy, fine. Best on quince.



30. VIRGALIEU. — (White Doyenne, St. Michael, Butter Pear.)—Medium, yellow, fine texture, melting, buttery, rich, excellent; fine market pear.

Fig. 57.—VIRGALIEU.

CLASS III.—WINTER.

31. BEURRE D'AREMBERG.—Large, greenish yellow, melting, juicy, vinous; great bearer, good keeper. Early winter.

32. LAWRENCE.—Medium, yellow, melting, sweet, rich. Good grower, fine bearer. Early winter.

33. PASSE COLMAR.—Medium, pale yellow, buttery, melting, sweet. Overbears. Early winter.

34. DOYENNE D'HIVER.—Large, yellow and brown, melting, buttery, rich. Vigorous; long keeper.

35. PRINCE'S ST. GERMAIN.—Medium, green and dull red; juicy, melting, fine. Ripens through winter.

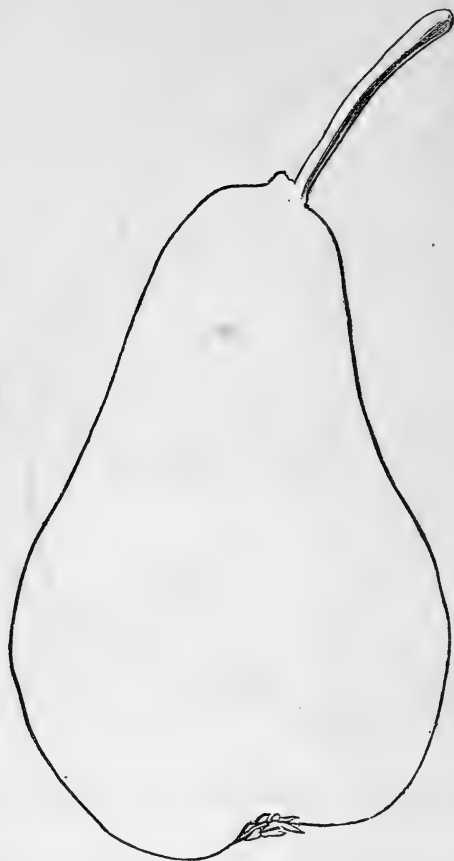
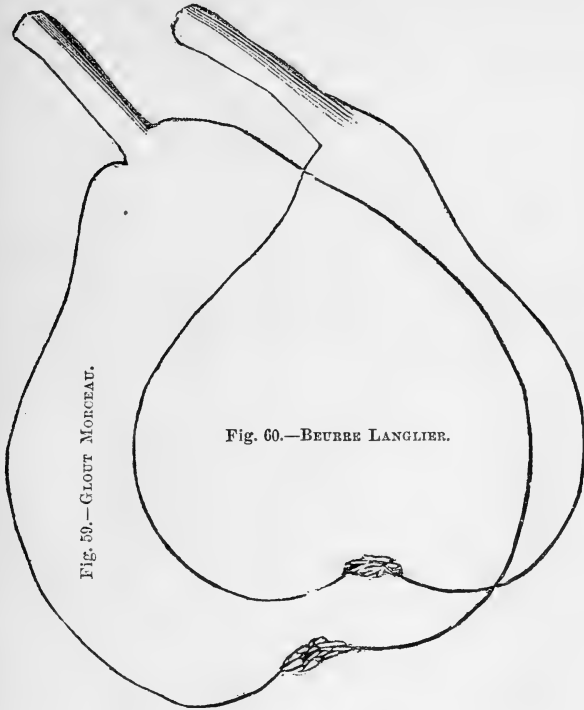


Fig. 53.—VICAR OF WINKFIELD.

36. VICAR OF WINKFIELD.—Quite large, pale yellow, reddish cheek, juicy, buttery, good. Ripens late autumn and early winter for about three months, which, with its productiveness, fine qualities for cooking, and uniformly fair fruit, makes it very valuable.



37. GLOUT MORCEAU.—Large, greenish, buttery, melting, sweet. Early winter. Best on quince.

38. BEURRE LANGLIER.—Large, pale yellow, slight blush, melting, juicy, rich. Early winter.

39. EASTER BEURRE.—Large, yellowish green, very buttery, excellent, juicy, first-rate flavor. Ripens in spring. Best on quince.

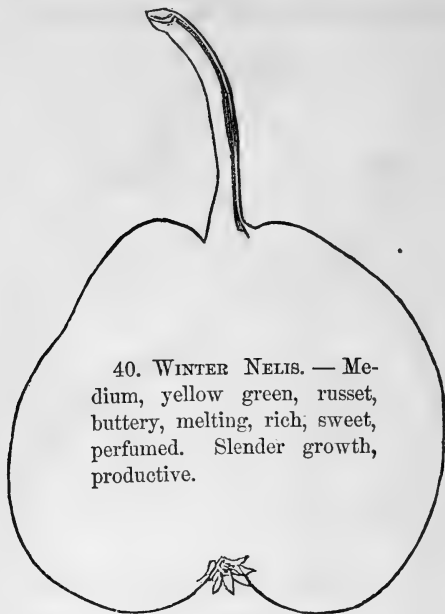


Fig. 61.—WINTER NELIS.

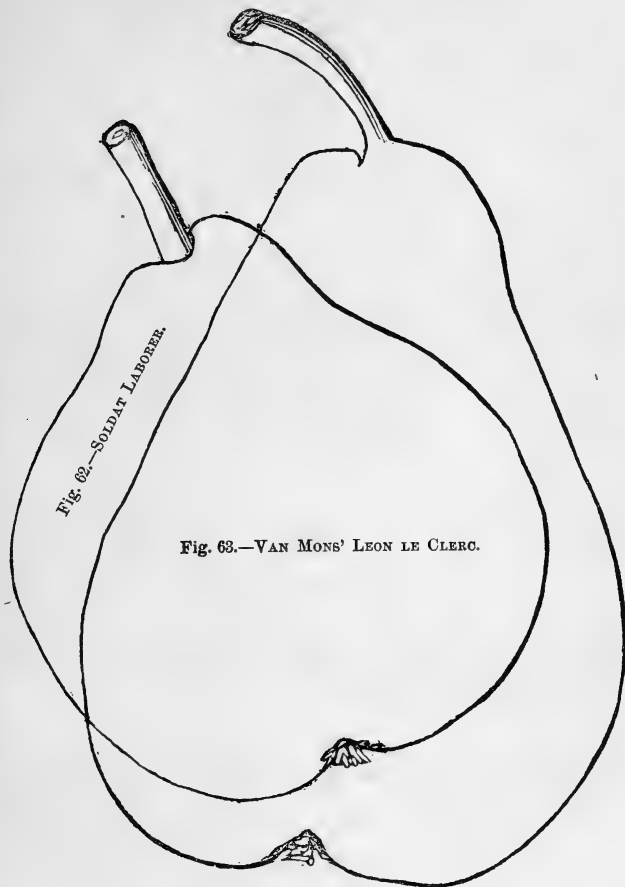
The above list (with descriptions condensed) is extracted from TUCKER'S *Annual Register*. The following are described in ELLWANGER & BARRY'S *Catalogue*:

SUMMER.

- 41. AMIRE JOANNET.—On pear and quince, profuse bearer.
- 42. BEAUPRESENT D'ARTOIS.—Productive on quince.
- 43. CANANDAIGUA.—Good on pear or quince.
- 44. ENGLISH JANGONELLE.—Good on quince.
- 45. KINGSESSING.—On pear or quince.
- 46. STRIPED MADELEINE.—Similar to No. 1, only striped.

47. MUSCADINE.—Not good on quince.

48. MOYAMENSING.—Good on both pear and quince.



49. ROUSSELET STUTTGART.—Good on both.

50. SUMMER FRANCO RÉAL.—Ditto.

AUTUMN.

51. BEURRE CAPIAUMONT.—Good on quince.
 52. BEURRE SUPERFIN.—Bears young. Good on quince.
 53. BEURRE D'WATERLOO.—New—good on quince.
 54. BONNE D'EZEES.—Delicate on quince.
 55. GANSEL'S BERGAMOT.—Best on pear.
 56. BEZI DE MONTIGNY.—Fine on quince.
 57. COMPTE DE LARNY.—Bears well on quince.
 58. DUNMORE.—Large, fine, very productive.

Add the following as new pears which promise well:

Soldat Laborer,	Beurre Goubault,	Beurre Clairgeau,
Van Mons' Leon le Clerc,	Manning's Elizabeth,	Doyenne Goubault,
Ott,	Julienne,	Van Assche,
Westcott,	Duchess of Berry,	Bergamotte d'Esperin,
Sterling,	Jalousie Fontenay Vendee,	Josephine de Malines.
Beurre Giffard,		

Chapter Twelve.

THE PLUM.

THE plum is a native of this country, and is to be found in great variety, growing wild in many parts of the United States. It is naturally a prolific bearer, producing most generous crops of red and golden fruit, and has been as much improved by scientific propagation and culture as any other fruit. It can be cultivated with much success in a great variety of soils and climates, but of late years has been much neglected, in consequence of the ravages of the curculio—that arch destroyer of all the smooth-skinned fruits. In many instances cultivators have cut down their trees, and given it up in despair, while thousands of others, when planting, have neglected to plant the plum altogether, and devoted their grounds to other fruits. This is wrong; for if only partial crops can be occasionally secured, it will repay the labor and expense, and then many experimenters have an abiding faith that the ravages of this great enemy will yet be arrested.

Let every owner of an orchard or garden, however small, plant at least a few of the best sorts, and our opinion is, that an enlightened and liberal culture, with a vigilant lookout for the first appearance of the enemy, will produce its reward in time.

Plums are generally thought to do best in strong, clayey soils—but they thrive in a great variety of soils. Plant in any good soil; but wherever that may be, be sure that it is well drained, and that the tree is liberally supplied with its necessary and proper food.

Animal manures and salt are regarded as the best for that purpose. These should be applied early in the spring, in the Middle States. Sow a half peck or so of salt under each tree, covering the ground to such a distance as the roots extend.

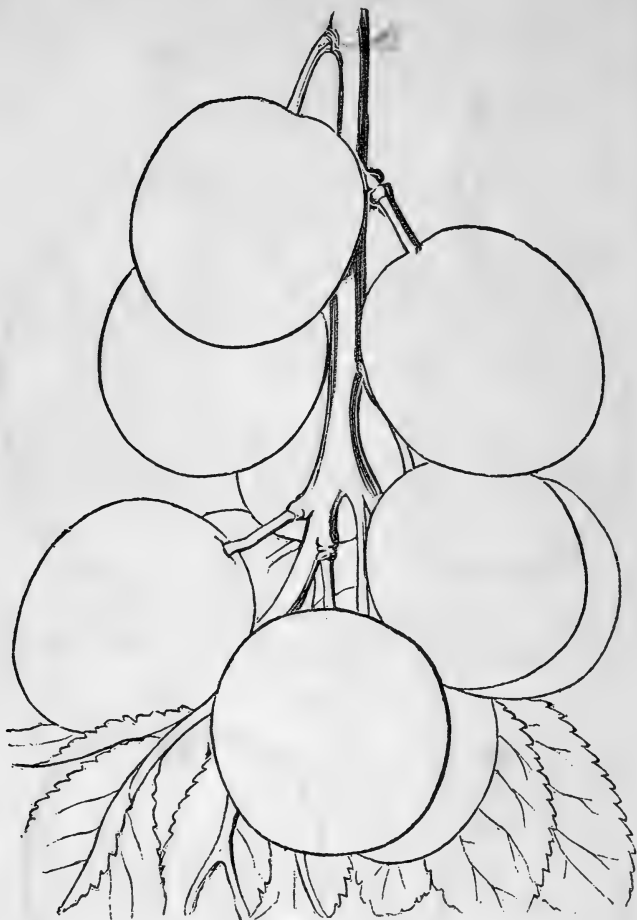


Fig. 64.—THE PLUM.

VARIETIES.

The American Pomological Society recommends the following as being worthy of general cultivation :



Fig. 65.—BLEECKER'S GAGE.

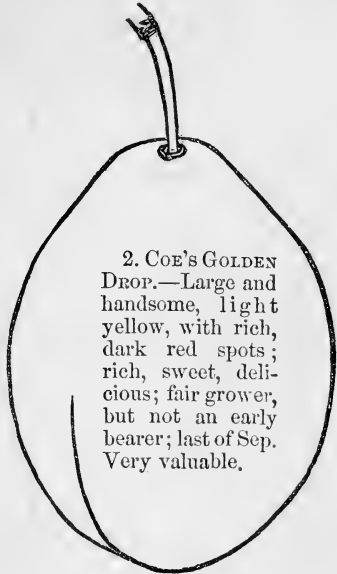


Fig. 66.—COE'S GOLDEN DROP.

3. GREEN GAGE.—Rather small, round; green, then yellow; melting, sweet, and rich. Slow grower.

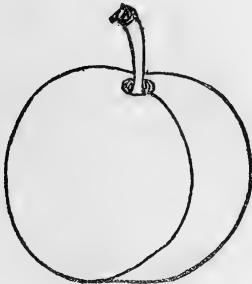


Fig. 67.—GREEN GAGE.

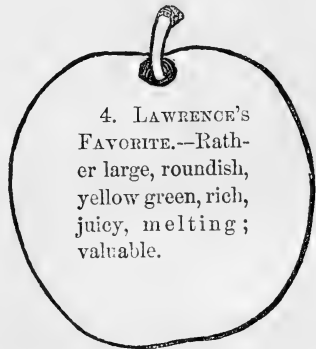


Fig. 68.—LAWRENCE'S FAVORITE.

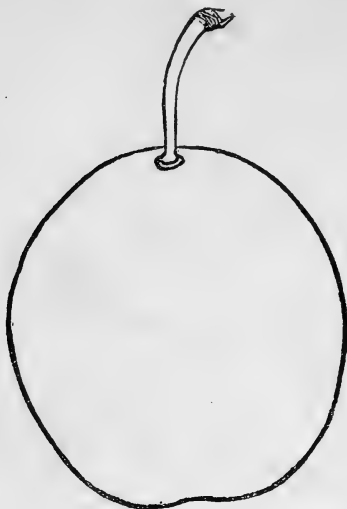


Fig. 69.—JEFFERSON.

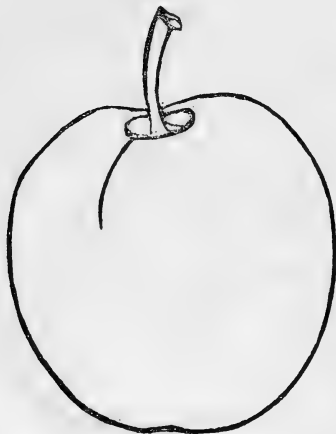


Fig. 70.—WASHINGTON.

5. FROST GAGE.— Small, deep purple, sub-acid, then sweet, very late, hardy; great bearer.

6. JEFFERSON.—Large, oval, golden, purplish cheek, juicy, rich, high-flavored. Slow grower, but prolific. Last of August.

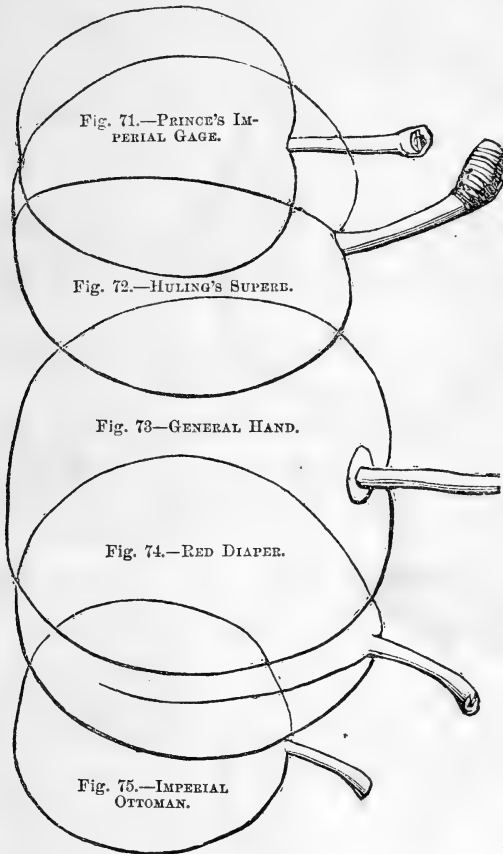
7. McLAUGHLIN. — A new plum from Maine. Large, flat, russet yellow, red tinge, juicy, firm, very sweet; remarkably hardy, vigorous, and productive. Last of August.

8. PURPLE GAGE.— Medium, roundish, violet; firm, rich, sugary, excellent. Tree similar to Green Gage.

9. PURPLE FAVORITE. —Medium, roundish, brown purple, very juicy, tender, melting, sweet. Slow grower, but hardy and productive. Middle of August.

10. WASHINGTON.— Very large, green with red; firm, sweet, mild. Free grower and bearer. Last of August. Good in a variety of soils.

11. REINE CLAUDE DE BAVAY.—Foreign, new, one of the best; very large, roundish, green with red; firm, juicy, sugary, rich. Vigorous and very productive. Middle of September.



12. SMITH'S ORLEANS.—Very large, reddish purple; juicy, vinous flavor. Productive, vigorous. Last of August.

To which may be added the following, all of which have been recommended as valuable in certain soils and localities :

13. DENNISTON'S **SUPERB**.—Medium, very productive. Middle of August.

14. PRINCE'S **IMPERIAL GAGE**.—Hardy, productive; superior to Green Gage.

15. **LOMBARD**.—(Bleecker's Scarlet.)—Thrifty, hardy, productive. Not so attractive to the curculio as others.

16. **MADISON**.—Good flavor, very late, hardy. Last of October.

17. **IMPERIAL OTTOMAN**.—Early, hardy, abundant bearer. Last of July.

18. PRINCE'S **YELLOW GAGE**.—An abundant bearer and good for market.

19. **RED GAGE**.—Small, good flavor; hardy and vigorous, and an abundant bearer.

20. **SAINT MARTIN'S**.—Good bearer, late. First of October.

21. **SCHENECTADY**.—Thrifty, hardy, prolific. Last of August.

22. **AUTUMN GAGE**.—Slow grower, but productive; medium, yellow.

23. **COE'S LATE RED**.—Medium, purplish red; very productive.

24. **DOWNTON IMPERATRICE**.—Medium, pale yellow. Last of September.

25. **FELLENBERG**. Very productive, late; good for drying.

26. **GENERAL HAND**.—Very large, yellow; vigorous and productive. First of September.

27. **LOK WORTH IMPERATRICE**.—Large, purple. October. Will keep till Christmas.

28. **MANNING'S LONG BLUE PRUNE**.—Large, oval, purple; bears abundantly. September.

29. PRUNE D'AGEN.—New, French, excellent. Last of September. Great bearer.

30. REINE CLAUDE D'OCTOBER.—Small, green, rich; very hardy. Middle of October.

31. RIVERS' EARLY PROLIFIC.—New, English; medium, excellent; very productive, early.

32. ROYAL HATIVE.—Medium, purple, new. August.

33. PRIMORDIAN.—Small, very productive. First of July.

34. HOWELL'S EARLY.—Small, sweet, productive.

35. PEACH PLUM.—Very large and productive; dull red.

36. HUDSON GAGE.—Medium, yellow, rich, excellent.

37. DUANE'S PURPLE.—Very large, showy, and productive.

38. BINGHAM.—Large, deep yellow; productive, valuable.

39. HULING'S SUPERB.—Large, oval, excellent; moderate bearer.

40. BLUE PLUM.—From the South. Productive. Propagated by suckers.

41. BUEL'S FAVORITE.—Large. Last of August.

42. COLUMBIA.—Large, valuable for the South. Last of August.

43. EMERALD DROP.—Medium, productive. Last of August.

44. EARLY PURPLE.—Small, round; good at the South. June and July.

45. ELFREY.—Very productive, good for drying; succeeds best South. July and August.

46. ITALIAN DAMASK.—Productive, fine South; good in all soils.

47. LONG SCARLET.—Medium, red and yellow. Last of August. Fine for jelly.

48. THOMAS.—Large and good; great bearer. September.

49. RED MAGNUM BONUM.—Large, beautiful; vigorous and productive.

50. YELLOW MAGNUM BONUM.—Large, good for cooking; very productive; profitable.

Of the above, the following have been tested, and found to succeed well, and have been recommended by leading societies and cultivators in half a dozen States:

Bleecker's Gage,	Huling's Superb,	Smith's Orleans,
Coe's Golden Drop,	Imperial Gage,	Washington,
Frost Gage,	Jefferson,	Yellow Gage, and
Green Gage,	Lawrence,	Yellow Magnum Bonum.

SELECT LISTS.

WM. N. WHITE, Esq., of Athens, Ga., has furnished for the *Horticulturist* the following list of plums, which he regarded as about the only valuable ones in his section of the country:

Sea, or Early Purple,	Bingham,	Red Magnum Bonum,
Prince's Yellow Gage,	Bleecker's Gage,	Blue Plum,
Italian Damask,	Elfrey,	Jefferson,
Columbia,	Imperial Gage,	Chicasaw.
Duane's Purple,	Manning's Long Blue Prune,	

Best three for a succession:

Prince's Yellow Gage,	Imperial Gage,	Jefferson.
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Best six—add to the above:

Sea,	Elfrey (or Columbia),	Red Magnum Bonum.
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SAMUEL WALKER, Esq., of Massachusetts, has furnished the following list as the best for that region:

Green Gage,	Washington,	Columbia,
Purple Gage,	Jefferson,	Imperial Gage.

The following list is recommended by Dr. BRINCKLE, of Philadelphia, as suitable for that region:

Green Gage,	Washington,	Coe's Golden Drop.
Lawrence,		

The following, for heavy soils, is given by A. J. DOWNING in the *Horticulturist*:

Imperial Ottoman,	Bleecker's Gage,	Coe's Golden Drop,
Yellow Gage,	Jefferson,	Frost Gage.

TUCKER'S *Annual Register* for 1857 furnishes the following list for Tennessee and other Southwestern States :

Lawrence Gage, Jefferson, Coe's Golden Drop.

BARRY, in his "Fruit Garden," gives the following select lists—
For the garden :

Green Gage,	Lawrence's Favorite,	Purple Gage,
Imperial Gage,	Smith's Orleans,	Reine Claude de Bavay,
Jefferson,	Purple Favorite,	Coe's Golden Drop.

For market :

Frost Gage,	Yellow Magnum Bonum,	Smith's Orleans,
Imperial Gage,	Red Magnum Bonum,	Washington.

For drying :

Fellenberg,	Prune d'Agen,	St. Martin's Quetsche.
German Prune,		

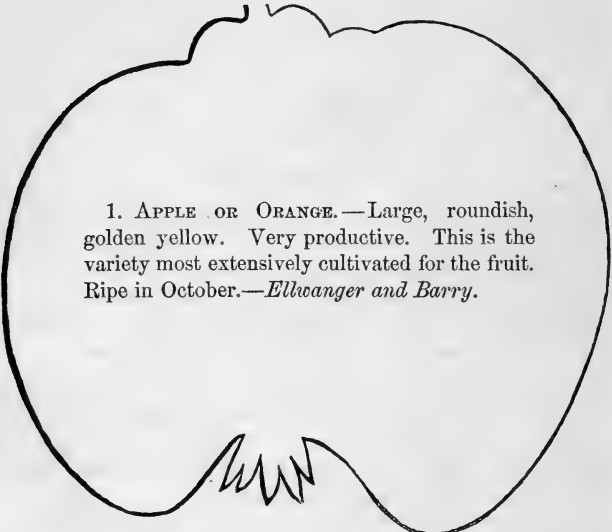
Chapter Thirteen.

THE QUINCE.

THE quince is a valuable, but much neglected fruit. It is not eaten raw, which accounts for its being so generally neglected by the majority of people. It is valuable for preserving, and for making marmalades, jellies, etc. It is also good for drying.

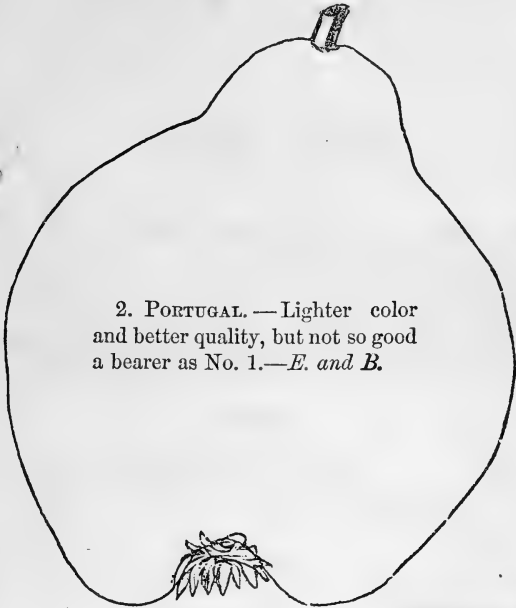
Quinces should be gathered by hand, and with care, so as not to bruise or indent them, then wrapped in paper, and kept in a cool room.

VARIETIES.



1. APPLE OR ORANGE. — Large, roundish, golden yellow. Very productive. This is the variety most extensively cultivated for the fruit. Ripe in October.—*Elhwanger and Barry*.

Fig. 76.—APPLE OR ORANGE QUINCE.



2. PORTUGAL. — Lighter color and better quality, but not so good a bearer as No. 1.—*E. and B.*

Fig. 77.—PORTUGAL.

SOIL, ETC.—For the quince a moist soil and shade are very generally recommended; but where a proper quantity of manure is used, and the proper cultivation given, these are not essential. The soil should be deep and rich, and large quantities of barn-yard manure should be mixed with the soil, together with an abundance of salt. Liquid manures are also valuable on the quince.

TRANSPLANTING—may be done either in fall or spring, but the former is generally preferred. Before transplanting, quinces should be freely pruned, cutting back—say one half or two thirds of last year's growth. The tree should be left with a low head, the stem not more than one or two feet long.

Good and thorough cultivation and free manuring will accomplish more, perhaps, for the quince than for any other fruit. Neglect your trees, and your fruit (if so fortunate as to have any) will

be rough and stunted in growth; give them an abundance of food and culture, and they will repay you with a profusion of large, smooth, and golden fruit. Plant ten to twelve feet apart each way.

INSECTS.—The following remedy for the borer is taken from THOMAS' *Fruit Culturist*:

"The borer sometimes proves a formidable enemy. It is the larva of an insect which attacks the wood of the trunk near the surface of the ground, and works inward, usually upward, but sometimes downward, to a distance of several inches into the wood during the summer season.

"As the borer frequently destroys the tree, various means of prevention have been resorted to. The remedies described for the apple-borer are found useful. When the insect has once obtained possession, the best method appears to be direct attack. Scrape the soil from the trunk, and cut with a knife lengthwise, and not across the bark and wood, till the insects are found. Repeat the operation once a week for several times, as a part escapes the first examination. Then cover the wounded parts with a mixture of warm tar with ochre or brick-dust."

Chapter Fourteen.

THE RASPBERRY.

THIS is one of the best and most wholesome of the small fruits; yet it is seldom cultivated, except in the neighborhood of cities. The few who pretend to grow it in the country, generally neglect it to such an extent that the fruit is hardly worth the trouble to pick; yet it is a fruit that will richly repay a free and generous culture. It deserves to be, and ought to be, in every man's garden.

Make the soil deep and rich. A deep loam or vegetable mold is the best, well drained, and loose and well pulverized. Its habits are about the same as those of the blackberry—hence its culture should be much the same.

In transplanting, shorten back the plants to ten inches or a foot, and set them as early in the spring as the season will admit. They should be well mulched and kept clean of all weeds and grass; from three to five canes may be allowed to grow in each hill; all the least thrifty ones should be cut away.

After the fruit is off, or any time before the early spring, all the old canes should be pruned away close to the ground, and also all the less thrifty of the new ones, leaving about four or five to grow and bear fruit the coming season. If more are needed for the purpose of transplanting, leave six or eight in a hill, and afterward transplant a portion of them. The stems which are left for fruit should be cut back to three or four feet, and neatly trained to a stake, or tied together to stiffen them. They should be allowed to spread at the top. Many train them against a board or other fence, or an out-house.

Several varieties of the raspberry are too tender to withstand the severity of our winters without protection. This may be afforded in several ways. It may be done by bending the canes to the ground, and covering them slightly with earth, being careful to guard against breaking them by being bent too abruptly. They

may also be bent down, and covered loosely with straw or leaves, or other litter. The earth should be hilled up against them before bending, in order to prevent breaking. Some cultivators have taken them up in the fall, and buried them through the winter in sand; but this mode is not to be recommended.

Raspberries should be renewed every five or six years, as after that they begin to deteriorate.

The best varieties of the raspberry are the—

1. **RED ANTWERP.**—A large, dark red, rich and juicy berry; admirably fitted for marketing.

2. **FASTOLFF.**—Resembling the Red Antwerp, but richer and softer in texture.

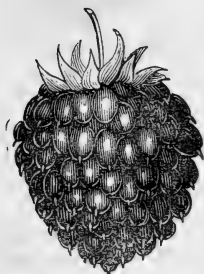


Fig. 78.—RED ANTWERP.



Fig. 79.—FASTOLFF.

3. **FRANCONIA.**—Quite similar, but later, of firm flesh, and is rather hardier than either of the others.

4. **YELLOW ANTWERP.**—Large, conical, excellent, but tender, and a moderate bearer.

5. **LARGE-FRUITED MONTHLY.**—Large, red; bears late, and valuable.

6. **BRINCKLE'S ORANGE.**—Regarded by many as the best of all raspberries; vigorous, hardy, productive, handsome, and excellent. —*Tucker's Annual Register*, 1857.

7. KNEVETT'S GIANT.—Very large, and of fine quality.

8. COL. WILDER.—Resembling the latter, but with smaller berries, and much harder stems.



Fig. 80.—KNEVETT'S GIANT.



Fig. 81.—COL. WILDER.

There are also several other varieties which promise well, or are highly esteemed by certain cultivators, among which are—

9. OHIO EVERBEARING.—A variety of the native Black, which bears large, good fruit, and ripens its last berries late in the fall.

10. CUSHING.—Produced by Dr. BRINCKLE, of Philadelphia; strong, vigorous, matures early, and will perhaps produce a second crop South.

11. WALKER.—Another of Dr. Brinckle's. Large, crimson, firm; keeps well. Also—

Vice-President French, Fulton, Gen. Patterson, Mrs. Wilder.

—all seedlings produced by Dr. BRINCKLE, and all promising well.

Many writers on fruits, as well as medical men of the highest standing, agree in recommending the raspberry for its healthful qualities. And as it is a most delicious and agreeable dessert fruit, and can be used in such a variety of ways, its cultivation can not be too strongly recommended.

Chapter Fifteen.

THE STRAWBERRY.

MR. PARDEE, in his "Strawberry Manual," says: "A large crop of strawberries may be expected every year with as much certainty as a crop of corn, and in fact more so; for our directions embrace a protection from drouth, which so frequently happens to the corn crop."

MR. DOWNING says: "Ripe, blushing strawberries, eaten from the plant, or served with sugar and cream, are certainly Arcadian dainties with a true paradisaical flavor, and, fortunately, they are so easily grown that the poorest owner of a few feet of ground may have them in abundance."

And MR. BARRY says: "Any one who can manage a crop of corn or potatoes, can, if he will, grow strawberries."

In reference to the ease and cheapness with which this delicious fruit can be grown, MR. PARDEE further says, that with him the average cost of producing them, during many years, has been less than fifty cents per bushel, and that he has grown on small beds at the rate of 250 bushels per acre. The profits to be derived from their culture may thus be easily conjectured.

An article which we find in the *Horticulturist* for August, 1854, from the pen of its talented editor, MR. BARRY, is so near to our purpose in treating of the strawberry, that we shall take the liberty to quote largely from it here. He says:

"We will state here, at the outset, that to cultivate the strawberry successfully is but a simple matter. To grow large, handsome, fine-flavored fruit in abundance, it is not necessary to employ a chemist to furnish us with a long list of specifics, nor even to employ a gardener by profession who can boast of long years of experience. Any one who can manage a crop of corn or potatoes can, if he will, grow strawberries. We say this much by way of encouragement, because so much has been said in regard to various

methods of culture, and various applications and specifics, that some people have become persuaded that a vast deal of learning and experience is necessary to produce large crops of strawberries.

"Judging from what we have seen, we believe that the great cause of failure is negligence. The strawberry plant—not like a tree, which, when once set in its place, remains there—is constantly sending out shoots (runners) in all directions, taking possession of the ground rapidly around the parent plant. In a short time, therefore, unless these runners are kept in check, the ground becomes entirely occupied with plants, the parent plants become exhausted, and the ground can no longer be stirred or kept in such a condition as is necessary to sustain their vigor. The result is, the ground is covered with a mass of starved and weakly plants, choking up each other in a hard, uncultivated soil, and producing a sparse crop of small, insipid berries, that dry up on their stalks before they are ripe, unless rain happens to fall every day."

Of the necessity of thorough cultivation he adds:

"The constant stirring of the soil around the plants is one thing which in our climate is absolutely necessary; and any system of culture which precludes this, or throws any obstacle in its way, is defective. If any one will examine his strawberry beds, he will find the plants along the outer edges of the beds, where the soil has been kept clean and fresh by the frequent use of the hoe, vigorous and healthy, with luxuriant dark green foliage, and large, fine fruit; while in the interior of the beds, where the plants have grown into masses, and covered all the ground, so as to prevent its cultivation, they are yellow and sickly looking, and the fruit poor and worthless. This we see in our own grounds, and everywhere that we find plants growing under similar circumstances. Does not this show the necessity of cultivation close around the plants? No matter how deep we may trench the soil, or how unsparing we may be with manures, or how copiously we supply moisture, this cultivation can not be dispensed with, if we aim at producing fine fruits and abundance of them. 'But,' says one cultivator, 'by allowing the ground to be all occupied with plants, we save all the labor which would be consumed in removing the runners, and we avoid the necessity of applying a mulching to keep the fruit clean.' Very true, you save some expense; but what do you get in return? A crop of fruit not fit for the table—small, insipid, and

so dirty, if a heavy rain occurs about ripening time, that it must be put through the wash-tub before it is placed on the table. It is possible that the market grower may be able to produce berries of this kind at a less price per quart than he could by a careful, cleanly, and thorough system of culture: but then he can expect to sell such fruit only when no better can be had. We have some doubts, however, as to the economy of bad culture in the long run. If a proper system were adopted at the outstart, and followed up with regularity, it would not be found so profitless or expensive. In this, as in every other kind of culture, a system is absolutely necessary. A certain routine of operations, which are easily executed, if taken at the right time, become burdensome when deferred; and being so, they are not unfrequently put off altogether. Precisely thus it is that strawberry beds are neglected, both in market gardens and private gardens, until they are grown wild beyond hope of recovery. Now, we say to every one who wishes to cultivate strawberries, resolve at once upon abandoning the 'lazy-bed' system; and if you cultivate but a square rod, do it well."

Strawberries have been most usually grown in beds, which is a

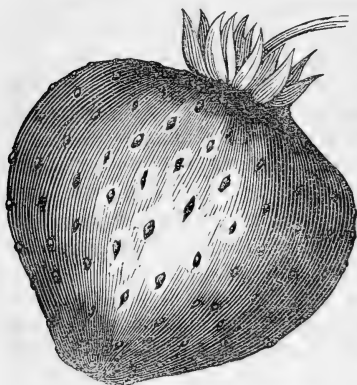


Fig. 82.—HOVEY'S SEEDLING.

bad practice; and, although many cultivators produce fine crops by thus growing them, it is clear that the planting in rows, or even hills, is preferable, in order that the earth may be kept properly stirred about them, and the runners cut away. Mr. B. says:

"We advise planting in rows not less than two feet apart, unless ground be very scarce, when eighteen inches might suffice, and the plants be twelve or eighteen inches

apart in the rows. In extensive field culture the rows should be at least three feet apart, in order to admit the use of the plow and cultivator between them, or even the passage of a cart to deposit manures or mulching material. The spade and wheel-barrow are

too costly implements for an extensive culture where labor is scarce and high, as with us. From the time the plants are set until the fruit is gathered, the runners should be cut away as fast as they appear, and the ground be kept clean of weeds, and well worked."

The mulching process he regards as indispensable:

"In the fall, or before the setting in of winter, a mulching of half-decayed leaves or manure should be placed between the rows, coming close around the plants, leaving the crown or heart uncovered. This mulching prevents the plants from being drawn out and weakened, or destroyed by freezing and thawing in winter. We have sometimes covered the entire beds, plants and all, with newly fallen leaves; and by raking them off early in spring, the plants came out in fine order. In the same way we have covered with clean wheat straw, and found it answer well. In all the Northern and Western States some winter protection is of great service, although not indispensable. In field culture, the earth might be plowed up to the plants, as is done with nursery trees, in such a manner as to afford considerable protection against the action of frost on the roots.

"As soon as the fruit begins to attain its full size, and approach maturity, the spaces between the rows which up to this time have been under clean culture, should be covered with straw, litter, or moss. This will serve the double purpose of keeping the fruit clean and retaining the moisture in the soil. When copious supplies of water are to be applied, which should always be done when practicable, stable litter is a good mulching, as the water poured on it carries down with it to the roots of the plants the fertilizing materials which it contains."

Of late years artificial watering has come to be regarded as entirely indispensable to the production of fine and perfect fruit. On this point Mr. B. remarks:

"The application of water in abundance we must again recommend to all who want the finest fruit. Rains are very good, but they can not be relied upon, and they always deprive the fruit of its flavor, while artificial waterings do not. On this account the French gardeners say that the strawberry 'prefers water from the well to water from the clouds.' It is supposed that the electricity which pervades the atmosphere during our summer rains affects the flavor of the fruit."

Of transplanting:

“When the crop has been gathered, the mulching material between the rows should be removed, and the ground be forked over, so that if plants are wanted to form a new plantation, their growth

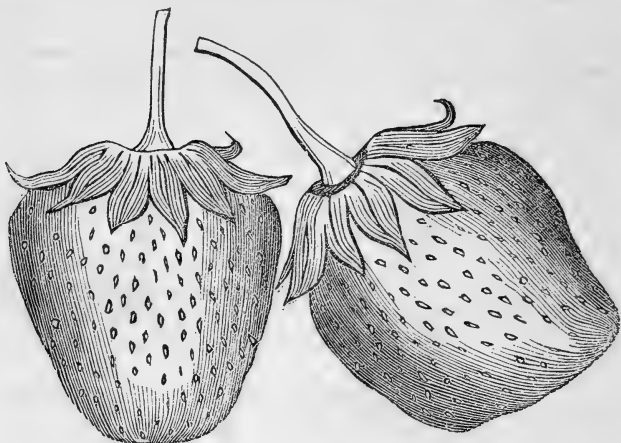


Fig. 83.—BRITISH QUEEN.

will be encouraged. The same plants should not be relied upon for more than *two* crops. The labor of making a new bed, to save the trenching of the soil, is no more than that of planting a plot of cabbages.

“As to the season for planting, we would recommend the spring for large plantations, because then there is comparatively no risk of failure. The amateur, however, who wishes only to plant a bed in his garden, may do it at any time that he can procure good plants. If the growth of runners is encouraged in July, after the fruit is gathered, good, well-rooted runners may be had about the first of September, or it may be sooner. The young plants nearest the parent plant should always be chosen, if possible. In planting during the month of August or September, rainy weather should be chosen if possible; but it may be safely done even in a *dry* time, by using water freely. Water the plants well before taking them up, as it injures the roots very much to draw them out of dry

ground; then water the soil thoroughly where they are to be set, before planting. A sprinkling will be of no use; it must go down deep, as a heavy rain would. Set the plants in the evening, and shade them a few days with boards set on edge, forming a sort of roof over them. Mulch them, too, with short litter; and it will be well, if the plants be large, to remove some of the lower and larger leaves. Planting can be done safely in spring any time until the plants are in blossom—and all summer, for that matter, with proper care."



Fig. 84.—

Mr. DOWNING has recommended the following plan for the cultivation of a strawberry bed:

"Early in April, or in August, being provided with a good stock of strong, young plants, select a suitable piece of good, deep soil. Dig in a heavy coat of stable manure, pulverizing well and raking the top soil. Strike out the rows three feet apart with a line. The plants should now be planted along each line about a foot apart in the row. They will soon send out runners, and these runners should be allowed to take possession of every alternate strip of three feet, the other strip being kept bare by continually destroying all runners upon it, the whole patch being kept free of all weeds. The occupied strip or bed of runners will now give a heavy crop of strawberries, and the open strip of three feet will serve as an alley from which to gather the fruit. After the crop is over, dig and prepare this alley or strip for the occupancy of the new runners for the next season's crop. The runners from the old strip will now speedily cover the new space allotted to them, and will perhaps require a partial thinning out to have them evenly distributed. As soon as this is the case, say about the middle of August, dig under the whole of the old plants with a light coat of manure. The surface may be then sown with turnips or spinage, which will come off before the next season of fruits.

"In this way the strips or beds occupied by the plants are reversed every season, and the same plot of ground may thus be continued in a productive state for many years."

VARIETIES.

Of the different varieties, Mr. BARRY, in the same article, continues:

"Now, as to varieties. On this point there is room for a great diversity of opinion, and we can not hope to name a list that will be acceptable to a very large number of persons, at least in many parts of the country. Planters must have recourse to the best experience to be found in their respective localities; in the mean time we shall express our opinion of a few varieties, and let it go for what it is worth.

"It happens that in this country the greater number of our most productive varieties have but one set of the organs of fecundation. A fruitful flower must have both pistils and stamens perfectly developed. The stamens are regarded as the male organs, and the pistils the female. When a flower has well-developed pistils, but

no stamens, or imperfect ones, it must be impregnated by pollen from other flowers. Where a flower has no pistils, or has imperfect ones, it is utterly *barren*. A large number of our best American varieties—such as Hovey's Seedling, Burr's New Pine, McAvoy's Superior, Moyamensing, etc.—are wanting in stamens, and therefore foreign impregnation is necessary. In Europe this distinction is not observed to any extent, and all the English and Continental varieties, as far as we know, are hermaphrodite. In this country very many of them fail from an imperfect development of the pistils, and are consequently barren, owing doubtless to the effects of climate and culture. It is not necessary that the two should be in close proximity; they are sure to get impregnated if in the same garden, as the pollen is carried about from one flower to another by insects. The beds of the different sorts may be kept entirely separate. Mixing them up is a bad way, as the one outgrows and overruns the other, and they become so confused that nothing can be done with them. On this account many have grown tired of keeping up the distinction, and have resolved to cultivate hermaphrodite sorts only.

The following varieties are the best on the long list of those we have tested on our own grounds:

“**PISTILLATE.**—Burr's New Pine, Jenny's Seedling, McAvoy's Superior, Hovey's Seedling, Moyamensing, Monroe Scarlet, and Crimson Cone. The finest flavored variety among these is Burr's New Pine; the largest, Hovey's Seedling; and the finest and best for market, Jenny's Seedling and Crimson Cone. Hovey's Seedling, in Western New York, and in many parts of the West, is very moderate, and in many cases a poor bearer. We have had no crop so heavy the past season (when all bore well) as on the Monroe Scarlet.

“**STAMINATE OR HERMAPHRODITE.**—Large Early Scarlet, Walker's Seedling, Iowa, Boston Pine, and Genesee. All these may be grown successfully for market, and are good without being first-rate in flavor. We think much more of Walker's Seedling now than we did last season. It is very hardy, and a great bearer. It appears to be a seedling from the Black Prince. The Boston Pine is the most uncertain on the whole list; without good soil and culture it fails entirely.”

1. BURR'S NEW PINE.—Large medium, fine flavor, early bearer, and uniformly productive.

2. JENNY'S SEEDLING.—Large, bright, handsome color, moderate bearer.



Fig. 85.—JENNY'S SEEDLING.

3. McAVOY'S SUPERIOR.—Very large, high flavor, hardy and vigorous; productive.

4. HOVEY'S SEEDLING.—Very large, deep scarlet; firm, agreeable.

5. MOYAMENSING.—Very productive; valuable for market.

6. MONROE SCARLET.—Large, scarlet exceedingly productive.

7. CRIMSON CONE.—Medium, dark crimson, beautiful; very productive.

8. LARGE EARLY SCARLET.—Medium, light scarlet, productive, and good.

9. WALKER'S SEEDLING.—Large, dark crimson, hardy, productive.

10. IOWA (or Washington).—Large, light red, productive.

11. BOSTON PINE.—Large, light red, hardy, very productive.

12. GENESEE.—Large, bright crimson scarlet, vigorous, very productive.

To which list may be added the following, many of which have been tried in various localities, and are strongly recommended. The pistillates are marked P; the staminate S.

13. Longworth's Prolific.....S.	22. Bishop's Orange.....P.
14. McAvoy's Extra Red.....P.	23. Burr's Columbus.....P.
15. Rival Hudson.....P.	24. Burr's Scarlet Melting....S.
16. Alice Maude.....S.	25. Burr's Ohio Mammoth....S.
17. Black Prince.....P.	26. Orange Prolific.....P.
18. Lizzie Randolph.....P.	27. Scarlet Cone.....S.
19. Swainstone Seedling.....S.	28. Cushing.....S.
20. British Queen.....S.	29. Prolific Hautbois.....S.
21. Bicton Pine.....S.	30. Western Queen.....P.

In planting, care should be taken to use from one fourth to one tenth of the staminate varieties, as impregnators for the remainder. They should be planted in rows by themselves, and should not be permitted to intermix their runners. THOMAS recommends that they be planted one row in five, with a walk between the two varieties, thus:

P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P
P	P	P	P	S	P	P	P	P

This is for close garden culture; but for field culture, where the rows and hills are wider apart, so as to permit the use of the harrow or cultivator, there should be a greater proportion of staminate.

January 1st 1900
The first day of the new year
is a day of great rejoicing
and festivity throughout the world.

It is a day when people
gather together to celebrate
the beginning of a new
year and to wish each other
happiness and prosperity.
In many countries, there are
great parades and fireworks
to mark the occasion.

It is a day when people
reflect on the past year
and look forward to the
future with hope and
optimism. It is a day
when people wish for
peace and harmony
in the world.

It is a day when people
celebrate the birth of a
new year and a new
beginning.

A P P E N D I X .

THE CURCULIO.

THE greatest enemy to the Fruit Garden, and the greatest pest the cultivator has to contend with, in this country, is the CURCULIO. Wherever he makes his appearance, he causes himself to be feared; and although in some localities his ravages have been partially stayed, and himself driven away for a time, yet he is at all times and in all places a most formidable foe. As yet no remedy seems to have been found by which fruit of all kinds can be made entirely secure from his depredations.

Some time since, Hon. JAMES MATHEWS, of Coshocton, Ohio, announced through the *Horticultural Journal* that he had discovered a remedy which he believed to be effectual, and which he had taken great care to test before announcing it to the public. This remedy he proposed to submit to the test of a committee to be selected by three leading horticultural societies; and if, after a full trial, this committee decided in its favor, he proposed to make it public for a certain consideration. The committee were accordingly appointed—consisting of men of the first standing in the country—and, we believe, the remedy submitted to them; but although two seasons have since passed away, we are not aware that they have ever made a report, or even come to a decision on its merits.

MR. MATHEWS pledges himself that it is *cheap*, and *easily applied*; thus, in case it should be found entirely efficacious, capable of being brought into general use. The expectations of thousands of Fruit-Growers have been raised by the announcement of Mr. M.'s remedy, and the result is anxiously awaited. Should it prove to be what is claimed for it, it will be worth millions to the people of this country, and will place Mr. MATHEWS in the position of a public benefactor.

In the mean time, however, experiment after experiment has been made, and many remedies have been announced, some of which are no doubt valuable, and have been partially, if not in some instances wholly, successful. Before proceeding to notice these remedies and preventives, some description of the insect and its workings may be proper.

THE CURCULIO is a small winged insect, about one fourth of an inch in length, when at his full size; his body is dark, and the tips of his wings light, which fold over upon his back. These insects fly, and sometimes crawl into the tree, where they pierce the young fruit, and deposit therein a small, whitish egg, making a puncture in the fruit about as large as a pin-head, and in the form of a half moon. In about ten days or two weeks these eggs hatch into a white larva or worm, which remains feeding in the fruit until it causes it to decay and fall. Sometimes, if the fruit has not been punctured until it has attained a considerable size, its vigor of

growth will prevent its falling; but it will be prematurely ripened, and will be useless, the worm being found in it at maturity.

When the decayed fruit falls, this larva leaves it and enters the ground, where it is frequently reproduced the same season, and sometimes not until the following year.

Such are their numbers, and such their activity in puncturing the young fruit and depositing the eggs—beginning as soon as it gets the size of a pea, and continuing until nearly ripe—that large crops of plums, nectarines, and apricots are totally destroyed by them. They work generally in the middle and sultry hours of the day, and are mostly found in a torpid state early in the morning or on cool days, and when disturbed will fall to the ground.

The remedies for the curculio may be divided into three classes—first: those directed against it while in the chrysalis state in the ground; second: when depositing its eggs in the fruit on the tree and third: while in the larva state in the fruit itself.

1. No precautionary measures can be depended upon to prevent their appearance; for while one cultivator may succeed in guarding against them, so far as his own premises are concerned, his neighbor may be less careful or fortunate—and as they can fly, he is not secure. Many modes have been resorted to in order to guard against their first appearance. Paving with brick or stone, or even boards, and beating down and hardening the ground, under the trees, have often been practiced, and sometimes quite successfully.

2. There are various modes of getting rid of them when in the *winged* state. One is to jar the tree, and catch them in sheets or cloths spread under the tree, and then destroy them. This is done in the morning, and should be repeated every morning as long as the fruit remains liable to be attacked by them. Shaking the tree with the hand is not sufficient to bring down all, but a sudden jar will have to be resorted to. Care must be taken not to injure the bark. Another method is to apply the fumes of burned sulphur; this is done by throwing the sulphur upon a hot shovel, or heated iron vessel, and placing it under the tree. Another mode is to sprinkle the tree itself with sulphur, after a rain, and while the leaves and fruit are wet. Lime-water, thrown on with a syringe, has also been used in some instances with good success. The odor from hydro-sulphide of ammonium (mixed with two parts of water, and placed in small phials under each tree) is said to be effectual in driving them away. Powdered lime, thrown upon the tree by the hand, or sifted upon it by means of a sieve attached to a pole, after a rain, or while the dew is on in the morning, has been known to be effectual. A very successful experiment with lime, known to the writer, is worthy of a more minute detail in this place:

Mr. JAMES B. MATHEWS, of Warsaw, Ill., during the season of 1856 tested this remedy most effectually and with entire success. He had some six or eight Chickasaw plums growing in his garden in a cluster, within a few feet of each other. They were four or five years old, and were this year well set with fruit. On about one third of the trees he commenced using the lime, while the fruit was yet very young, and before the curculio had "marked it for his own." On another portion he used none at all, and on the remainder he allowed them to attack the fruit before he commenced applying the lime. He applied it as often as once a week, or every time it rained, and sometimes on the dew in the morning—covering the tree till it would look white with it—and continued the process until the time of ripening of the fruit.

The result was, that on those trees upon which no lime had been sifted, the fruit was entirely destroyed by them, not one being allowed to ripen. On those upon which he had used the lime early, the fruit was not attacked, but grew and ripened finely. While on those which had been attacked before he began to lime the trees,

they were, after a few applications, entirely driven away, and a portion of the fruit saved.

Such is the result of one experiment with lime in one locality; and it may well be doubted if the experiment of the Ohio Mathews, with his remedy, could have been more successful. Yet one experiment, however successful, is not sufficient; and it is hoped others, in all parts of the country, will make a thorough test of the remedy this season (1857), and give the result to the public.

3. Another remedy is to keep pigs or barn-yard fowls inclosed among the trees which are liable to be attacked by the curculio. The first will eat and destroy the larva in the decayed fruit, when it falls; and the last will catch and scare away the flying insect, while in the act of committing its depredations. A Mr. P. S. BUSH, of Covington, Ky., has been very successful with this last mode. The Cincinnati Horticultural Society last season appointed a committee to visit the grounds of Mr. BUSH, and report the means resorted to by him to save his fruit. They did so, and from their report we extract the following paragraphs:

"The committee found in luxuriant bearing a variety of plums, consisting principally of the Yellow Egg, Emperor, Bolman's Washington, Blue Gage, and Bleecker's Red Gage. Never, perhaps, in the recollection of any of the committee was such a sight of loaded branches presented to the eye; and with one accord, they seemed to think the day had not gone by when we should forever fail to have this delicious fruit in all its magnificent perfection. Upon a close examination, it was soon found by the committee wherein consisted the pre-eminent success of Mr. BUSH in this peculiar branch of horticulture. His trees are mostly in close contiguity to his residence, and in such a situation as that they are passed and re-passed every hour in the day by the inmates of the house, as well as the fowls of the yard. Two of his trees are within a high paling inclosure, in which is also erected a chicken-house. Upon these the fowls are allowed to roost at night, and are constantly under the trees during the day.

"Mr. BUSH also called attention to the fact that some of his neighbors had the same varieties of trees, of the same age, planted remote from the house, in lawns and vegetable gardens, but were entirely without fruit.

"The committee are most clearly of the opinion that there is no plan heretofore adopted so successful for the propagation of the plum as to have the trees planted within an inclosure where the fowls are made to run and to roost. The size of the yard must, of course, depend upon the number of fowls in general kept by the proprietor. Trees planted in near proximity to the kitchen, or any part of the house most frequented and passed, would reward the owner with a large supply of fruit. As both positions must necessarily be more or less circumscribed, it might be well to profit by the two situations suggested by Mr. BUSH to the committee.

"That chickens and plums should go together is an opinion the undersigned have not the least hesitation in expressing their entire confidence. The 'Grand Turk,' as the *curculio* is quaintly styled by some writers, can not be bought, begged, coaxed, or killed, but may be *frightened* off. He seems to be a sort of politician, more afraid of *shadows* than the substance."

As no war was ever carried on with more determined energy than that now waging against the "Turk," the common enemy of all Christian and civilized people (for all such are presumed to be lovers and admirers of good fruit), it may reasonably be anticipated that the "good time is coming" when a brilliant victory will be achieved, and the enemy beaten back. Until then, let us urge all to plant—plant plums, plant nectarines, plant apricots—plant all the varieties of fruits, as well those that are subject to the attacks of the curculio as those that are not.

PRESERVING FRUITS.

GATHERING and preserving fruit after it is grown is an important branch of domestic economy. It is folly to expend money and time in the planting and cultivation of fruit, and then allow it to go to waste for the want of proper care and management.

APPLES.—All kinds of fruit should be carefully picked from the tree by hand, holding the branch or limb in one hand, and carefully picking, one by one, the fruit with the other. This should always be done in dry weather, and they should not be allowed to get wet after picking, but should be removed as picked to some cool, dry place—barn, shed, or other out-house—and placed in convenient piles, where they may remain two or three weeks. Apples should be picked in baskets, and carried in them to the place of deposit, and should there be taken out separately by the hand, as they were placed in it; in no case should they be poured upon the floor, as they will thereby become more or less bruised.

After lying as above for two or three weeks, they are ready for packing. In all cases, whether for foreign or domestic market, or for home consumption, they should be carefully assorted, keeping the different varieties—the large and the small, the sound and the unsound, sweet and sour, etc., all separate. If they are to be barreled, select good, new, and clean barrels, and pack carefully by hand. Bran, chopped straw, oats, saw-dust, and powdered charcoal have all been used for packing, and are all doubtless valuable. The latter is no doubt the best, and will keep fruit the longest; but it is also the most costly and the least easily obtained. In packing, use first a layer of charcoal, or whatever the material may be, then a layer of apples, then again of charcoal, and so on, taking care not to permit the fruit to touch the barrel or each other. As soon as packed, carefully head up, mark, and deposit in the place where they are to remain.

When thus packed, apples will bear a very cold atmosphere; and it is desirable to keep them at all times in as cold a place as possible without freezing. A dry and cool cellar is perhaps as good a place as can be usually obtained for keeping apples in the winter.

Bins, or shelves, may also be provided for keeping fruit, when it is inconvenient to put them in barrels. These should be suspended or placed upon posts in the middle of the cellar, or away from the walls, so as to protect them as much as possible from dampness, and in order to give them a free circulation of air. The saw-dust or cut straw may be very properly used in packing them away in these bins.

Apples thus packed away should be occasionally examined, and all the decaying ones removed.

PEACHES, when ripe, are of such a perishable nature that it is extremely difficult to keep them for any considerable length of time, except by packing in ice or excluding them entirely from the atmosphere. The former method has been sometimes practiced for the purpose of transporting them to warm climates; but it is attended with so much trouble and cost as to prevent its ever being brought into general use. The latter has of late years been much better understood, and is successfully practiced in all parts of the country.

The process is simply in excluding the air, and then hermetically sealing the vessel containing them. Tin canisters, six to eight inches long, and four or five wide,

are mostly used ; but large-mouthed glass bottles are also good, and in one respect better, as the condition of the fruit in them may at all times be seen through the glass.

Select fruit that is just ripe and in good condition, free from all bruise or speck of decay. Some put them in whole, after rubbing off the down with a wet cloth. Others pare and cut them in quarters, taking out the stone. Fill the canisters, and afterward carefully solder on the top, in which a hole about as large as a small pin-head has been previously punctured. Then set them in a vessel of boiling water, and keep them there until the temperature of all the fruit in the cans has reached as high as the water. As long as it is below that, air will continue to escape through the hole, and will cease as soon as that point is reached. Then close the hole by placing a drop of solder upon it, and remove the canister from the water. If the operation has been successful, the ends of the canister will become depressed after cooling, caused by the outside pressure of the atmosphere ; and, if the canister has been well made and the soldering perfect, the fruit will be kept from decay for an indefinite period.

If glass bottles are used, they should be filled, and then set in cold water, and be brought to a boil gradually, as the glass will otherwise crack. Well-fitted corks should be first prepared ready for use, and a cup of sealing-wax, melted, close at hand. As soon as the air has been sufficiently excluded, press in the cork until it is even with the mouth of the bottle, and dip it hastily, bottom upward, into the sealing-wax, thoroughly covering the whole. Then set away to cool.

STRAWBERRIES, RASPBERRIES, BLACKBERRIES, CHERRIES, CURRANTS, GOOSEBERRIES, and, in fact, all the small fruits, of whatever name, are successfully preserved in this way at the present day, and are sold in all the fruit-shops.

THE following method of preserving small fruits—or, indeed, any kinds—has been practiced successfully : “ Lay the ripe fruit in broad dishes, and sprinkle over it as much sugar as it would need in cooking it. Then set it in the sun, or a moderately heated oven, until the juice forms a thick syrup with the sugar. Pack the fruit in tumblers, and pour the syrup over it. Paste writing paper over the glasses, and set them in a cool, dry place. Peaches must be pared and split, and cherries stoned. Preserved in this manner, the fruit retains much more of its natural flavor and healthfulness than when cooked.”

GRAPES are said to keep well put away in the following method : “ Take a well-bound cask, from which the head is to be removed, and place at the bottom a good layer of fine saw-dust or bran. On this place a layer of grapes, then each alternately, until the cask is full, taking care that there is sufficient bran between each layer of grapes to prevent their touching each other. Put on the head, which is to be cemented, and the grapes will keep well for a year. When used, in order to restore their freshness, cut the stalk of each bunch and place it in wine, as flowers are placed in water.”

PROFITS OF FRUIT-GROWING.

THE following statement, prepared by a very intelligent and reliable fruit-grower in Illinois, will answer for almost any locality throughout the Great West, as serving

to show the cost and profit of the culture. It should be borne in mind that this statement embraces apples alone.

Deacon A. Scarborough, of Payson, Adams Co., Ill., being in St. Louis, in the spring of 1839, purchased forty apple-trees of one year's growth, of an Ohio nurseryman who was there with trees, the largest not being more than three feet in height. These, with some twenty others obtained from a different source, were planted on a piece of dry, rolling prairie land, with an eastern aspect. About fifty of the whole number grew, and although many of these were not what they purported to be, still there were some good varieties among them. In the spring of 1841 he added to his orchard some fifty trees more (of one year). In 1844 and 1845 still more, about one hundred (of two years). In 1848, 1849, and 1850 about one hundred and ten. Some of these were used from time to time to fill vacancies which had occurred.

The following concise statement will show the cost up to this time, Jan., 1855, viz.:

1839—60 trees, at 25 cents each.....	\$15 00	\$15 00
Allowance for freight and planting, 10 cents each.....	6 00	
Interest on the above, \$21 for 16 years, at 10 per cent. per annum.....	33 60	
1841—50 trees, at 16½ each.....	8 33	8 33
Allow for procuring and planting, 10 cents each.....	5 00	
Interest on \$13 for 14 years, 10 per cent.....	18 20	
1844—50 trees, at 12½ cents.....	6 25	6 25
Procuring and planting, 10 cents.....	5 00	
Interest on the \$11 for 11 years.....	12 10	
1845—50 trees, at 12½ cents.....	6 25	6 25
Procuring and planting, 10 cents.....	5 00	
Interest as above, \$11, 10 years.....	11 10	
In 1848-9, and 1850, say 49, 110 trees at 12½ cents.....	13 75	13 75
Procuring and planting.....	10 00	
Interest on \$22 75 for 7 years.....	16 62	
Now I allow for rent of land \$1 per acre per annum (being half the usual rent, as the crops raised in the orchard, other than apples, have not more than paid for cultivation and rent of ground, and much of the present orchard has only been a few years planted).....	60 00	
I allow for loss of trees by accident, etc.....	18 00	
Total.....	\$250 20	\$49 58

From the facts above given, it appears that the whole cost of the orchard up to this time, January, 1855, including purchase of trees, ample allowance for procuring and planting, loss of trees by accident, interest on the whole, and rent of land will amount to \$250, while the money actually paid in their purchase is only \$49 58.

Now, as an offset to the cost, we shall show the produce. The apples (winter) having been measured and noted down, with the price at which they were, or might have been, sold for cash:

1846—Thirteen bushels, worth one dollar per bushel.....	\$13 00
1847—Fourteen “ “.....	14 00
1848—One hundred bushels “ “.....	100 00
1849—Two hundred and fifty bushels, at 75 cents.....	187 50
1850—Fifty-eight bushels at one dollar.....	58 00
1851—Forty “ “.....	40 00
1852—Seventy-five “ “.....	75 00
1853—Seven hundred bushels, at 45 cents.....	315 00
1854—Five bushels, at \$1 50.....	7 50
Total.....	\$810 00

The above does not include any of the summer fruit, of which there is a good quantity, nor the autumn, that may not properly come under the description of early winter, and which I will estimate at one fourth its value:

Which will make 313 bushels, worth say 40 cents, which will give.....	\$125 00
To be added to the above, making.....	935 00
And now, if we add the product of 1855, 1,200 bushels, 1,000 of which were sold and delivered last fall, out of the wagons, at 50 cents.....	500 00
Remaining on hand at least one hundred dollars worth.....	100 00

We have as the product up to this time, January, 1856.....	\$1,535 00
Whole product of orchard up to January 1st, 1856.....	1,535 00

To which, if we add the interest on the money accruing from sale of fruit, prior to 1855, it will be more than three hundred dollars, which, however, I shall let go as an offset for picking and marketing.

Then the account stands, cost of trees.....	\$49 58
Procuring, planting, loss of trees, and interest of money.....	140 00
Rent of land	60 00
	<hr/>
Orchard product up to January, 1856.....	\$249 58
	1,535 00
Profit from apple product.....	<hr/>
	\$1,285 42

So much, then, is certain; but how shall we value the orchard itself, with its increasing products—especially as one half of the trees have scarcely borne any fruit yet, and these are all of the best varieties. I acknowledge myself unable to justly estimate its value—as the experience and results of the past seventeen years will hardly give us an idea of what it will produce during the next seventeen, much less give us a rule by which to calculate the future produce. The orchard contains six acres of ground, and has on it two hundred and sixty-six apple-trees. Yours,

PAYSON, ADAMS Co., ILL., 1856.

WM. STEWART.

MODE OF PROPAGATING FRUIT-TREES.

MANY persons are so situated, remote from nurseries, that it is extremely difficult to procure good varieties of fruit-trees for transplanting. To all such the following mode, practiced by Mr. TIMOTHY DUDLEY, of Mendon, Adams Co., Ill., may be of benefit. As a mode of grafting, we do not see why it may not be as good as any other. We copy from the Patent Office Report of 1848:

“In the spring of 1839 I bought one hundred seedling apple-trees for eight dollars, and paid in work. I planted them out in my garden, in rows four feet apart, that I might run a plow between them, and at five feet apart in the rows, and kept them well cultivated that season.

“In the spring of 1840, in the early part of March, I procured from the best orchard I could find (John Wood, Esq., Quincy) two or three large bundles of scions, cut from horizontal branches of last year's growth. These I buried in my garden three inches under ground until I should want them. When the season was so far advanced that the buds on the trees began to crack open and the small leaves to appear, I dug a trench along each line of apple-trees, about six inches deep, and about the same width. I then bent down an apple-tree, and with a forked stick drove into the ground, held it there firmly; then, with a sharp-pointed strong knife and a hammer I commenced grafting. First, I drove the knife through the tree

near the root, and made a cleft large enough to insert my scion. I then with a sharp knife cut my scion about six inches long, sharpened the lower end to a wedge-like form, drove it into the cleft until the bark on the scion just met the bark on the tree, pulled out my large knife—the split in the tree of course closed up and held my scion fast. In five or six inches I stuck in another, and continued on so until I came to the top of the tree. I then filled up the trench with fine, loose soil, trampling it down with my feet, leaving only the upper bud out of the earth. The top of the tree I covered up in the same way, leaving the ends of the twigs just out of the ground. In this way I treated my one hundred apple-trees, and in two days' time I had finished them. I would remark that the trees were about one and a half inches in diameter, and very thrifty. The scions grew astonishingly well. Of about 800 scions set, all grew but about two; and in two years the scions had formed roots of their own, so that when I took them up I broke off the old stalk and threw it away, and each twig of the top grew and formed roots of its own. Thus, by a little industry and management, I made 200 grafted trees for my own use, now bearing trees, and sold 1,000 trees, some for six to the dollar, and some at eight to the dollar.

“There is probably no food more natural to mankind than a good, ripe apple. It is anti-dyspeptic and anti-bilious; and if the people in this great valley of the West would eat less corn bread and bacon, and drink less strong coffee and whisky, and eat more of those rich, juicy apples, cooked or uncooked, we should see, hear, and feel less of those bilious complaints—fevers, agues, and chills—which every one is more or less subject to every season.

TIMOTHY DUDLEY.

MENDON, ILL.

[It should be borne in mind—an important fact, too, which Mr. DUDLEY omitted to state—that the trees which grew from the twigs at the top were *natural* fruit, of the same character as the original seedling; while those from the scions inserted along the body of the tree, were, of course, true to the graft.]

PROPAGATION OF FRUIT-TREES BY LAYERING.

THE mode of propagating fruit-trees, especially apples, by *layering*, has been successfully practiced by Mr. JOHN SLATER, of the St. Albans Nursery, Hancock Co., Ill. Mr. SLATER has been selling trees propagated in that way for ten or twelve years past; and it is within the writer's knowledge that some as fine-bearing and thrifty apple-trees as can be found in that part of the State were produced in that way. It is believed, however, that the mode is not popular with a majority of nurserymen—for what reason it might be hard to determine.

But without entering into a discussion of the question whether it or grafting is the better mode, we have thought proper to give in this place a short description of it, for the benefit of those who reside at points remote from nurseries.

ST. ALBANS, Dec. 24, 1856.

TH. GREGG, Esq.—*Dear Sir*: Your favor of the 17th inst. came to hand by the last mail. You request me to give you my mode of propagating fruit-trees by layering. As my present mode is very different from that with which I commenced, perhaps I had better give you a brief history of my experience in the business.

About fifteen years ago I became convinced that a choice fruit-tree growing upon

its own roots would generally be more likely to be long-lived, and bear better fruit, than if the same variety were grafted or budded on to an uncertain seedling stock. I then commenced layering in my nursery, according to the best directions that I could get from horticultural works. This mode was to bend down the lower limbs of grafts, and cover a part of the limb from four to six inches with earth; and at the place where the limb was covered deepest, to cut it about half off on the under side, and split it about an inch from the cut, toward the end of the limb. The end of the limb turned up was to form the tree; and as the descending sap was stopped at the cut, it would force out roots; and when it was sufficiently rooted, it was cut from the tree and re-set in the nursery, to be cultivated till it was large enough to be transplanted to the orchard. In this way I commenced layering the greater part of my varieties; but it was too slow a mode of raising trees, and I then began my present mode of layering the whole tree.

Having in the above way got layer trees from the most of my varieties, I took these trees and buried them in trenches from eight to ten inches deep, and turned the ends of all the limbs up, so as to have them come just out of the ground. In this way they will take root without having the limb partly cut off, and in two to three years will be of sufficient size to transplant to the orchard. We not only get trees from the limbs that are turned up, but there will be more or less shoots come up from the roots of the buried tree, which will make good trees. On account of these shoots that come from the root, it is very desirable to have layer trees for stock to begin with, where the whole tree is to be buried. For if a grafted tree is used for layering, the shoots from the seedling root will be likely to make a mixture of seedlings with the varieties cultivated. But with sufficient care, this kind of tree may be used for layering on a small scale.

I have succeeded well in layering apples, pears, plums, and cherries; but with the peach, nectarine, and apricot I prefer budding. Layering may be done late in the fall or early in the spring, but should be on dry ground.

There is still another way of growing fruit-trees on their own roots, which may be more convenient for those who only wish to raise trees for their own use.

Mr. DOWNING, in his work on "Fruits and Fruit Trees" (7th edition, p. 17), says: "Dr. VAN MONS, a distinguished horticulturist of Belgium, considers the practice of grafting on small pieces of roots as the most complete of all modes, with regard to the perfect condition of the grafted sort, because the lower part of the scion, being thus placed in the ground, after a time it throws out fibers from that portion, and so at last is actually growing on its own roots." But in the common mode of root-grafting the scion is inserted in the end of the root, and when the tree is taken up at three years old, there will be but a small portion of the roots from the scion, so that if the seedling part of the roots be all cut off, there will not be enough left to make the trees grow well when transplanted in the orchard. I have, therefore, when under the necessity of grafting, cut my scions about six inches long, and inserted them into the middle of a piece of root (the first cut of a one-year-old seedling is the best), about four inches long, so that the graft when set is like an inverted T. This graft is set so deep that the end of the scion comes just to the top of the ground; and when taken up at three years old, they generally have sufficient roots from the graft, and from the manner in which the scion was set in the root, the seedling roots are easily distinguished from those which shoot out from the graft, and can be cut off, and then the tree, like the layer tree, will be nourished wholly by roots of its own variety.

This kind of grafting can be done in the winter, and the grafts packed in the cellar in boxes of earth; or it may be done in the spring, and the grafts planted at once

in the nursery. Grafts set in this way need no waxing, and if the root be one fourth of an inch thick, they will be sufficiently firm without tying.

The above are the best modes with which I am acquainted of propagating the different varieties of fruit-trees on their own roots. Respectfully yours,

JOHN SLATER.

MISCELLANEOUS.

A STRAW HOUSE FOR KEEPING FRUITS AND VEGETABLES.—We think it was SOLON ROBINSON who recommended a plan something like the following for keeping fruits and vegetables. The building is easily made, and is composed of materials which almost every farmer has in abundance, and when properly built is as good as the best for the purpose intended. The materials used need be only straw and rails.

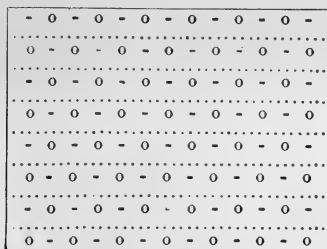
Build a rail pen of the required size, say one rail wide and two rails in length. This may be done by setting posts in the ground at the corners, and nailing or pinning the rails to them. Make it seven or seven and a half feet high. Outside of this pen, at a distance of four feet, make a similar pen, in the same manner and of the same materials—constituting one rail pen within another, with a space of four feet between them. Within this space pack well with straw until it is brought even with the top of the pen. Then cover entirely across the whole with straw, to any required height, rounding it at top like a stack or rick—first running poles across at convenient distances, on which the straw may rest. A door (which should be double—one for each pen) may be made at one end for entrance, formed of boards, and fitting closely, to keep out the frost; or, if preferred, an aperture only may be left in the straw, sufficiently large to admit a man's body, and which may be closed by a bundle of straw, properly fitted in, to be taken out when necessary.

In this way as good a fruit-house as is possible to be procured may be built at a very little cost, and with materials such as can be most cheaply obtained; and, if built strongly and securely, will last for half a dozen years or more. It must be inclosed, to keep it from being eaten up by cattle; and the straw must be well packed, and properly rounded at top, in order to turn the water. Outwardly, it will resemble a rick of straw. The ground selected should be dry, and a trench should be dug outside of the house, to prevent the water from soaking under.

Pumpkins and squashes, and all kinds of vegetables, as well as fruits, may be kept in such a house better than in most cellars, as it will be cool and dry.

In the West, where straw is allowed to go to waste in large quantities, and where cellars are not always to be obtained, a few days' labor will secure one of these straw houses, which, if properly built and protected, will last for years, and will be found indispensable.

DWARFING.—One of the principal advantages in planting dwarf trees is the facility with which a number can be grown in a small space—they can be readily managed at a distance of eight feet apart. Thus, a spot of ground sixty feet square will hold sixty trees, planted as in the following diagram, between the trees:



Current, gooseberry, or raspberry bushes may be set, as represented by the small dots, and rows of strawberries set as indicated by the dotted lines. The expense of preparing the soil, furnishing, and planting, as shown in the figure, would not exceed \$60, a sum which the small fruit alone would realize in three years after planting, at which time we may safely average the crop of pears at from ten to fifteen bushels of fruit of first quality, worth at the very lowest calculation three dollars per bushel. When we further consider that the quantity of fruit will be annually increasing, the profit of such an investment is sufficiently apparent.

GERMANTOWN, PA.

WM. SAUNDERS.

CUTTINGS.—A French writer describes a mode of making cuttings grow, which he says is unfailing. He digs a trench wide enough to receive both ends of the cuttings, which he places in a bent position, the ends pointing downward, and covers entirely with well-pulverized soil. The middle of each cutting must be just even with the top of the ground, and must have a bud or small shoot left at that point. They should be planted in the spring, and well mulched and protected from drouth. In this way grapes, roses, quinces, and even apples, pears, plums, and apricots can be readily obtained. But unless protected throughout the whole season from drouth by a judicious mulching and watering, they will inevitably perish before the roots are sufficiently grown to protect them.

SCIONS, from which it is intended to take buds, should have their terminal point pinched off about a week before it is intended to use the buds. This process gives them a greater plumpness, and increases their activity in starting into growth.

GOOD ADVICE.—"Farmers, plant trees. Good winter apples and pears will yet form an important item in our yearly exports. The smaller fruits will go out in cans, and any quantity may readily be sold in the European markets. Fruit-growing will yet supersede pork-growing; and all like good fruit much the best to eat."—*Life Illustrated*.

CHOPPED STRAW has been recommended as a most excellent mulch for the strawberry; but a mixture of saw-dust with it would doubtless make it better. The straw alone would probably be too light and open.

THE PEACH is by some cultivators in the Southern States sometimes grafted instead of budded, with fine success. It is said to answer well where the growth is very rapid. It is done in November and December.

TO DESTROY MOLES.—Take one pound bean meal, three ounces slaked lime, half ounce powdered verdigris, and four ounces essential oil of lavender; mix thoroughly

with a little water into a dough, make little balls, and place them about their holes. They may be driven off also by placing bits of codfish in their holes.—*Cor. Hort.*

A GOOD MODE of watering large trees is to draw the earth away from the roots to a convenient depth, forming a hollow into which water may be poured until it is filled. After it has fully soaked away, then replace the earth as before.

Another good mode is to dig a small trench around the tree, at a distance of, say three or four feet, and into this pour water until it is filled, and when soaked away, fill back the earth to its place.—*The Papers.* [But let it be remembered that when good cultivation and good mulching have been practiced, watering is never necessary, except in extreme cases.—EDITOR.]

CABBAGES may be preserved well and nicely during the winter, by cutting off the heads, and then packing closely in a barrel or box, and filling all the spaces with chaff or bran—then keep in a dry cellar.

GAS TAR, applied by means of a swab, is said to destroy the caterpillar instantly.

BURY DEAD ANIMALS in the soil where fruit-trees are to be planted, especially pears.

HOW TO SECURE GOOD FRUIT CROPS.—The Agricultural and Horticultural Society of Vaulcluse recommends that in order to insure a large crop in fruit-trees, the following plan should be adopted: A hole must be dug round the tree to a certain depth in the autumn, but not deep enough to expose the roots, and must then be filled up with manure; the manure should be left until frozen, and then be covered with the earth extracted. Thus covered over, the manure does not thaw until a late period, and thereby prevents the tree from budding early, and produces the effect intended. The same society further makes known that it is a well-ascertained fact that trees which yield most fruit are those whose branches grow horizontally, instead of vertically, and it therefore recommends that trees should, so far as possible, be trained to grow in that direction; it even declares that by such training, trees that have never yielded any fruit previously may be made productive.

QUINCES should be manured in November. Fork in five or six shovelfuls of fresh stable manure under each tree, and in the spring dig around each tree, and spread broadcast a good supply of salt—enough to nearly cover the ground.

Prune in the fall, cutting away only the decayed or decaying and unsightly branches.

BLACK KNOT.—WM. H. READ, correspondent of *Horticulturist*, ascribes this disease in plums to the fact that *dried plums*, which have decayed on the tree, by the ravages of worms or insects, have been allowed to remain there; and that thence, when this fruit is consumed, they perforate the bark, which has always been saturated with the poison and juice of the decayed fruit, and thus these deadly juices, together with the action of the insects, produce the disease known as the Black Knot. His remedy is to take away and destroy the decaying fruit as fast as it appears.

BLIGHT IN A VINERY.—The *English Gardener's Chronicle* gives an interesting account of blight being arrested in a vinery, after all other means had failed, by the application of the fumes of burned sulphur. The application was made daily.

SOAP-SUDS.—A. J. DOWNING says: "I have seen an Isabella Grape produce 3,000 fine clusters of well-ripened fruit in a single season, by the liberal use of manure and soap-suds from the weekly wash."

TO MAKE YOUNG PEAR-TREES GROW.—I was afflicted by the sight in my garden for four or five years of the most luxuriant and thrifty young pear-trees, which would not bear, but all their strength ran to wood. Vexed at this, I resolved to try the effect of bending down the branches so as to check the flow of sap, and cause them to form fruit-buds instead of wood-buds. Accordingly, the first week in December I filled my pockets with stout twine; I drove down some small pegs into the ground beneath my trees (which had branched low, so as to make dwarfish heads); I then tied a string to the end of every long shoot, and gradually bringing down the end of the limb till it curved down so as to make a considerable bend or bow, I fastened it in that position, either by tying the other end of the string to the peg, or to another branch, or to a part of the trunk.

According to my expectation, the tree next year changed its habit of growth, and set an abundance of fruit-buds. Since that I have had plentiful crops of fruit without trouble—take good care not to let many branches go on the upright system.—*Cor. Hort.*

SEVEN EIGHTHS OF AN ACRE.—I have just seven eighths of an acre of land where I reside. Upon it there is a small but comfortable dwelling-house, wood-house, carriage-house, smoke-house, and barn; a wood-yard, barn-yard, and a lane five rods long from thence to the road; also a front yard, four by six rods. By this time, perhaps, the reader is about ready to say, Well, this about occupies your seven eighths of an acre. But I also have a garden upon the same seven eighths of an acre, from which I raised the summer past all the onions, squashes, cucumbers, tomatoes, potatoes, sweet potatoes, sweet corn, asparagus, pie plant, beets, musk-melons, beans, peas, and cabbages, that were wanted for my family use (a family of six persons, besides working-men) during the time of using garden sauce. And, after the maturity of the crop gathered for fall and winter use, half a bushel onions, seven bushels potatoes, four bushels sweet potatoes, half a bushel sweet corn, and fifty-nine cabbage-heads.

I have a small nursery also upon this seven eighths of an acre, consisting of over 2,000 trees, mostly of fine size for transplanting, comprising apple, peach, pear, plum, cherry, quince, and grape trees. During the time of feasting we have had raspberries, gooseberries, and currants, almost without measure—bushels of each. Cherries, peaches, plums, pears, grapes, and apples have been used as free as water—how many I can not tell. I have sold from the same seven eighths of an acre trees to the amount of \$74 08. Fruit for cash—cherries, \$5 35; peaches, \$13 93; pears, \$5 50; plums, \$7 50; quinces, \$2 00, and grapes, \$5 75, making in the aggregate \$115 12. I have put thirty bushels of choice winter apples in my cellar, and, to finish off the list, have cut from four hundred to five hundred pounds of good hay.

This is a correct statement of seven eighths of an acre of land in Richfield, Summit Co., Ohio.—*Cor. Louisville Journal.*

LIQUID MANURE.—For fruit, the proper time for using liquid manure is when the fruit is beginning to swell, and has acquired, by means of its own green surface, a power of suction capable of opposing that of the leaves. At that time, liquid manure may be applied freely, and continued from time to time, as long as the fruit is growing. But at the first sign of ripening, or even earlier, it should be wholly withheld.—*Dr. Lindley.*

[Liquid manures should not, however, be applied on the surface of the ground, as by this the crust will be hardened. The surface earth should first be removed, or a better way is to mulch freely, and apply the liquid upon that.]

SALT freely used on asparagus beds, will be found highly beneficial. It should not be used, however, until the seeds have well germinated, and the plants become well established. It should be sown so as to cover the ground, before a rain.

SHORTEN-IN peach trees in March, always being careful to cut just above a wood-bud, so that the next season's growth may be a continuation of the last; whereas, if cut above a fruit-bud, the branch will decay down to the wood-bud, and the new growth take place at an angle, thus forming an unsightly top.—*Cor. Phren. Jour.*

MICE.—To prevent mice from girdling young fruit-trees, apply melted tar late in the fall. Put it on with a swab, completely covering the root and body as high as there is danger. It is a certain remedy.

MULCHING blackberries about the first of May is highly recommended for increasing the quality and quantity of the crop, as well as for prolonging the ripening season. In this way the severe drouth of the summer weather is rendered less injurious.

FROZEN TREES.—Packages of trees are sometimes frozen before they reach their destination from distant nurseries. When this is the case, they must not be allowed to thaw, or they will be lost. Immediately dig trenches in as mellow soil as possible, and bury the roots at once, settling the earth closely around them. This may be done by throwing cold water on the loose earth, and shaking the trees well. They should be covered deep. Before time for planting, they will be completely thawed, and will come out as fine as those which have not been taken from the nursery.

TO PRESERVE GREEN CORN.—Pull the ears when fit for eating, then strip down the husk, remove the silk, and carefully replace the husk again. Then pack away in a barrel, and place a weight upon it. Pour over it until it is covered a strong pickle, about such as is used for meat. In this way you can have a good article of fresh corn for winter use. It should be parboiled in fresh water to make it fresh and sweet for cooking.

TO PRESERVE EGGS.—Fill them into jars, with wheat bran to prevent them from breaking. The jars are then to be closed tight, and placed in a suitable vessel, with water heated to 12 degrees below boiling point, or 200 degrees of Fahrenheit. Then take off, and transfer the eggs to other jars, and they will keep good for six months.

FINE GUNPOWDER, mixed with tallow, and rubbed about the body of the young tree, is said to be a remedy against mice.

QUINCES make excellent preserves, but they also are a good dessert fruit. Pare and bake them, and then serve with cream and sugar.

ASHES have been recommend as a good dressing for the pie-plant.

SINCE forwarding the foregoing copy to the publishers, the writer, on opening Dr. TRALL'S "Hydropathic Cook-Book," published by Messrs. FOWLER & WELLS, met with the following paragraphs on the "Preservation of Fruits," which he takes the liberty of appropriating in this place:

Choice apples and pears may be kept very well, and often the year round, by wiping them gently dry, covering each with dry, soft paper, and laying them on

shelves, or on shelves covered with paper, without wrapping them. Pears and apples, if gathered a few days before perfectly ripe—not over six or eight—and packed carefully with dry moss, sand, bran, or in baskets lined with stout paper, will keep through the winter.

The principal condition on which the preservation of the more perishable fruits depends is the exclusion of atmospheric air. The more perfectly this is effected, the longer and better will the fruits be kept unchanged. And many fruits may be kept good for months, with a mere trifle of sugar, provided the air is nearly all excluded from the vessels which contain them, when otherwise they could not be kept without being *preserved* in sugar, pound for pound. I have known strawberries, whortleberries, peaches, pears, tomatoes, quinces, blackberries, etc., put up in this way, very nearly as well flavored and fresh in the middle of the winter as when first gathered in their season.

The North American Phalanx Company are now constructing an admirably planned building for preserving fruits and vegetables in either their ripe or unripe state. The drying apparatus is a series of shallow trays, with open network bottoms, supported above each other on sliding racks, making a double column of drying trays about thirty feet in height, all warmed to any requisite degree by the steam of a boiler in the basement. They are also largely engaged in putting up fruits, and have succeeded in so perfectly excluding the atmospheric air, as to keep tomatoes, berries, peaches, and pears, etc., fresh and undecayed a whole year, and some of them even longer.

They are put up in wide-mouthed quart jars, either of glass or stone. The fruit (except berries) is peeled, quartered, and their pips taken out, and the jars filled. These are then placed in a trough or shallow square tub, into which hot water is allowed to run till it surrounds the jars nearly to the top. The juice is thus heated sufficiently to expel the air, but not so as to boil or cook the fruit. The cork is, lastly, introduced, and covered with paste, cement, sealing-wax, or something impervious to air.

Undried grapes may be preserved a long time by placing them in large jars, filling up the jars with sawdust, and then cementing the lids so as entirely to exclude the air.

The following methods of keeping grapes in good condition long after they have ripened are convenient, and are said to be very successful. "Cut off the grapes, with a joint or two, or more, of wood below each bunch; make a clean cut, and apply sealing-wax, as hot as can be used, to it, and seal the wood closely, so that no air can enter the tissues communicating with the bunch. Then hang the bunches up on cords, with the stalk-ends downward, suspended across a closet in a cool, airy room, taking care that they do not touch each other; cut down as wanted. Or this: Cover the table in the fruit-room with fine, dry moss, and on this lay the bunches which have been carefully picked and cleaned of all bad berries, wiping the sound ones with a delicate piece of flannel; leave the bunches on the moss three days, each bunch by itself, which prevents the grapes from being injured by the pressure of their own weight; for want of moss, use cotton. Prepare hoops of proper strength, some three feet in diameter, with strings to suspend them, and attach the grapes to the hoop; take iron wire, just stout enough, when made into an S-shaped hook, to suspend one bunch—now fix one of these hooks to the bottom end of the bunch, and hang it on the hoop, so as to keep each bunch by itself. When they have hung some eight days, they will be free from moisture, if the weather has not been too damp, and when they are dry, close up the room perfectly tight; examine the grapes every eight days, removing all bad ones."

Green gooseberries and currants, if gathered in very dry weather, may be cut from the stalks carefully, and dropped gently into wide-mouthed bottles. The bottles are then to be corked, and rosined or cemented, and buried below the frost, or kept in a very dry, cool cellar. They will keep still better if the bottles are plunged for a few moments in hot water before corking.

Scalding fruit, so as to coagulate the gluten, and thus arrest the fermentation, has been resorted to successfully in preserving some kinds of fruits, especially apricots, gooseberries, currants, raspberries, cherries, and plums. Wide-mouthed stone bottles are filled with the fruit, carefully picked; they are then placed in a kettle filled with cold water nearly to the mouth of the bottles, and the water heated to one hundred and sixty-five degrees. After subjecting the fruit to this degree of heat for half an hour, the bottles are hermetically sealed.

Peach leather and *tomato leather* are prepared by squeezing out the pulp of the very ripe fruit, spreading it out thinly on plates or shingles, and drying in the sun, or by hot air or steam, until quite hard and tough. They may also be dried in a brick oven.

The following method of preserving peaches in tin cans recently appeared in a Mississippi paper, from the pen of a writer who claims to have had considerable experience:

"In the first place, be absolutely certain that the cans are made air-tight. Peel your peaches, cut them in halves, take out the seeds, and fill the cans within a half inch of the top, shaking the peaches down as close as possible. Then take loaf-sugar in the proportion of two pounds to a pint of water, boil, and strain. Pour this syrup over the peaches in the cans, and then have the square piece of tin put on, leaving a small vent in the center. Place the cans in a kettle with water enough to come within an inch of the top of the cans. Boil the cans from fifteen to thirty minutes, or longer if necessary, keeping the vent open with a knitting-needle, until the air or syrup ceases to flow. Remove the kettle from the fire, and while the cans remain in the hot water, close the vent with solder.

"This is decidedly the best plan, as I well know by experience. It takes no more sugar to make the syrup than it will take to sweeten them after you open the cans for use."

Pumpkins and squashes, and the stalks of rhubarb, can be conveniently peeled, cut into slices or strips, and dried in either of the foregoing ways.

The pomaceous fruits—apples, pears, peaches, etc.—peeled, cored, and cut into slices, or, if not too large, simply quartered, preserve their flavor and nutritive properties very well for nearly a year.

The majority of berried fruits retain a good degree of their dietetic qualities the year round, on being dried and kept in boxes or bags in a cool, clean, airy place.

PREPARED FRUITS.

There is a lamentable ignorance among almost all classes of people in relation to the cooking of the various kinds of fruits. Were our cooks well informed on this particular, good fruit would be much more sought after, and become in time much more abundant, and the health of the community greatly improved. The following directions are also copied from Dr. TRALL's book—a work which ought to be in the hands of every housekeeper:

BAKED APPLES.—The best baking apples are moderately tart, or very juicy, sweet ones. The former, of ordinary size, will bake in about thirty minutes; the latter, in about forty-five minutes. Select, for baking, apples of nearly equal size; wipe them

dry and clean ; put a very little water in the bottom of the baking vessel, and place them in the bottom of a hot oven.

STEWED GREEN APPLES.—Apples for stewing should be well flavored and juicy. Sweet apples, when stewed, turn more or less dark colored, and hence do not appear as well as tart ones on the table, though some persons prefer them. Pare, core, and quarter ; put a little water to them, and boil moderately till quite soft, and add sufficient sugar to suit taste—more or less, according to the acidity of the fruit. Some cooks flavor them with lemon ; others with a small portion of peaches or other fruits. Good apples, however, are good enough in and of themselves.

BOILED APPLES.—Select round, mellow apples of uniform size ; pare them ; boil in as little water as possible till soft ; put them in a vegetable dish ; and slowly pour over them a syrup, made by dissolving half a pound of sugar in a pint of boiling water.

STEWED PIPPINS.—A rich apple sauce is made as follows : Peel, core, and quarter half a dozen ribstone pippins ; put them into a pan with six ounces of brown sugar, the juice of a lemon, its thin rind cut into strips, and very little water ; stew over a very slow fire till quite tender.

STEWED DRIED APPLES.—Select rich, mellow-flavored fruit, which is clear from dark spots or mold. That which is dried on strings is usually the nicest. Wash and pick the pieces ; boil in just water enough to cover them, over a slow fire, till partially softened ; then add sugar or molasses, and continue the boiling till done. For a change, they may be occasionally flavored with a proportion of dried peaches or quinces.

PEARS.—Pears may be baked, boiled, or stewed in the same manner as apples. Some varieties of small, early, and sweet pears are very delicious, boiled whole without paring, and sweetened with syrup. The large pears are usually selected for baking.

BOILED PEACHES.—When peaches are not well ripened, or too sour to be eaten without cooking, boiling improves them very much. They should be pared—except when the skins are very smooth, clean, and tender—but not stoned ; boiled moderately till sufficiently cooked, and then sweetened.

STEWED GREEN PEACHES.—Pare them and take out the stones ; add a very little water, and a sufficient quantity of sugar, and boil very slowly till well cooked.

STEWED DRIED PEACHES.—Most of the dried peaches in our markets are sour and unpleasant. But when we can find them of good quality, they are very excellent stewed and sweetened precisely like dried apples.

UNCOOKED PEACHES.—When we have peaches as good and ripe as all peaches ought to be, the best way to prepare them is this : Peel them ; cut the fruit off the stones in quarters, or smaller pieces ; fill the dish ; stir in a little sugar, and sprinkle a little more over the top.

APRICOTS.—Ripe apricots may be preserved in the same way as peaches, but they are best with no preparation at all. Unripe apricots may be cut into quarters, sweetened, flavored with lemon, and stewed in a little water. They will cook in a very

few minutes. Avoid stirring and breaking the pieces, but shake the pan round occasionally to prevent burning.

CHERRIES.—Stewing is the only proper method for cooking this fruit. Remove the stalks from the cherries; pick them over carefully, rejecting all unsound ones; put them into a pan, with a very little water, and sugar in the proportion of about three ounces to a pound of cherries; simmer them slowly over the fire, shaking the pan round occasionally till done. If a richer article is wanted, take the cherries out with a colander spoon, and keep them in a basin till cold; reduce the sweetened water to the consistency of syrup, and put it over the cherries.

QUINCES.—It has been said that quinces commend themselves more to the sense of smell than of taste; hence are better to “adorn” other preparations than to be prepared themselves. When stewed till quite tender, and sweetened, they are, however, very pleasant, yet rather expensive sauce. In the form of marmalade, it is a better seasoning for bread, cakes, or puddings than butter.

QUINCE MARMALADE.—Pare, core, and quarter the quinces; boil them gently, uncovered, in water, till they begin to soften; then strain them through a hair sieve, and beat, in a mortar or wooden bowl, to a pulp; add to each pound of fruit three quarters of a pound of sugar; boil till it becomes stiff, and pour into small molds or sweetmeat pots.

STEWED CRANBERRIES.—Wash and pick the berries; stew them in just as little water as will prevent their burning, till they become soft; then add half a pound of the sugar to a pound of the fruit, and simmer a few minutes.

BLACKBERRIES.—When very ripe and sweet, a little sugar dusted over them is a sufficient preparation for the table. If sour, or not quite ripe, they should be stewed till soft, and moderately sweetened. The same rules apply to all berried fruits for which recipes are not given.

WHORTLEBERRIES.—Many prefer these uncooked and unseasoned. If stewed, however, they require but very little sweetening.

RASPBERRIES.—Red raspberries are never fit to be eaten till ripe, and then they require neither sugar nor cooking. Black raspberries, when quite ripe, are also best in a “state of nature.” If not entirely ripe, they may be stewed a few minutes, and sweetened with a very little sugar or molasses.

STRAWBERRIES.—Stewing is always an improvement to this fruit, especially for invalids, unless it is “dead ripe.” As we usually find them in our city markets, they are picked before the ripening process has matured them, and hence require considerable sugar.

GOOSEBERRIES.—Though very acid fruits, especially half grown, are not to be recommended to invalids, as a general rule, yet I find that many who are “on the sick list” can use stewed gooseberries without discomfort, and nearly all well persons can do the same. They should be cooked till thoroughly softened, and sweetened till palatable.

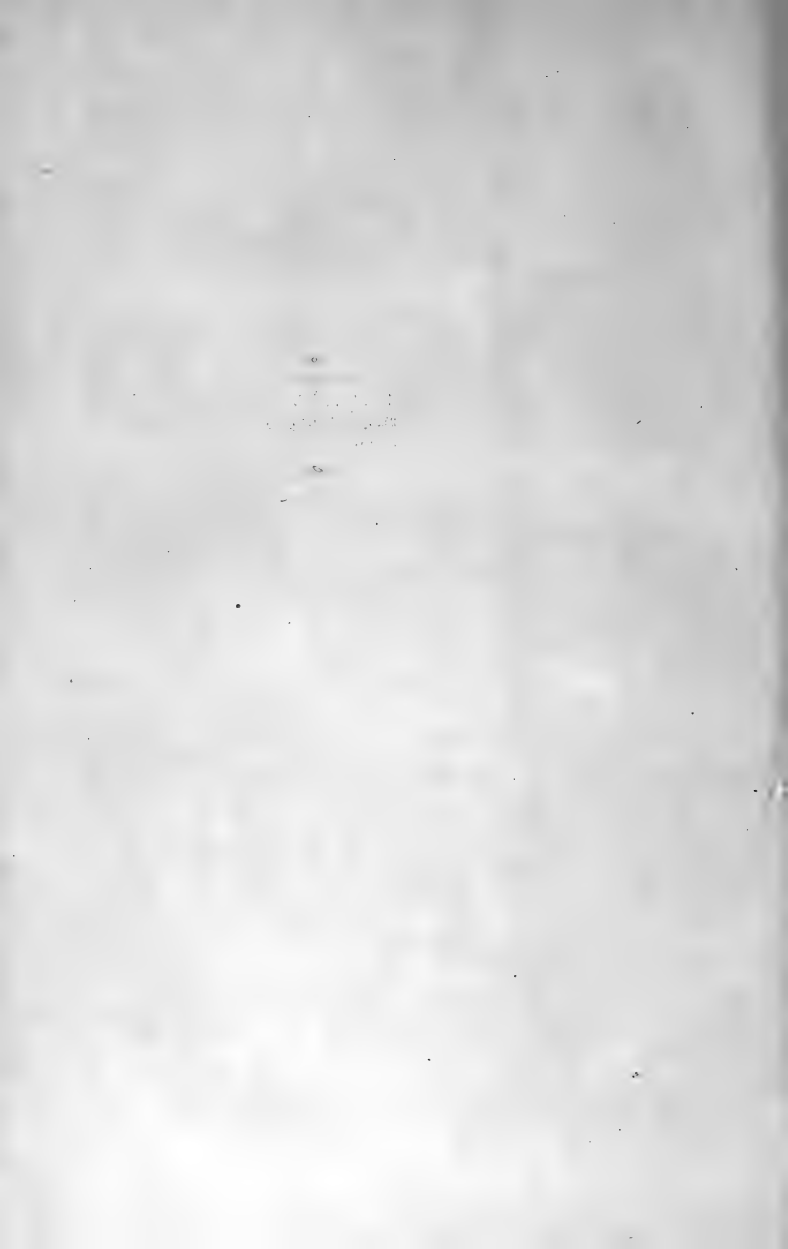
CURRENTS.—Green currants, when half or two thirds grown, are more mild-flavored and pleasant than when fully ripe; nor do I find them often disagreeing with ordinary dyspeptics. They require stewing but a short time, and moderately sweetening. The best currants, when quite ripe, may be eaten uncooked, with a sprinkling of sugar.

PLUMS.—These must be managed according to their character and flavor. Many varieties are too sour to be eaten without stewing, and the addition of considerable sugar. Some kinds, however, are sweet and luscious enough to require neither.

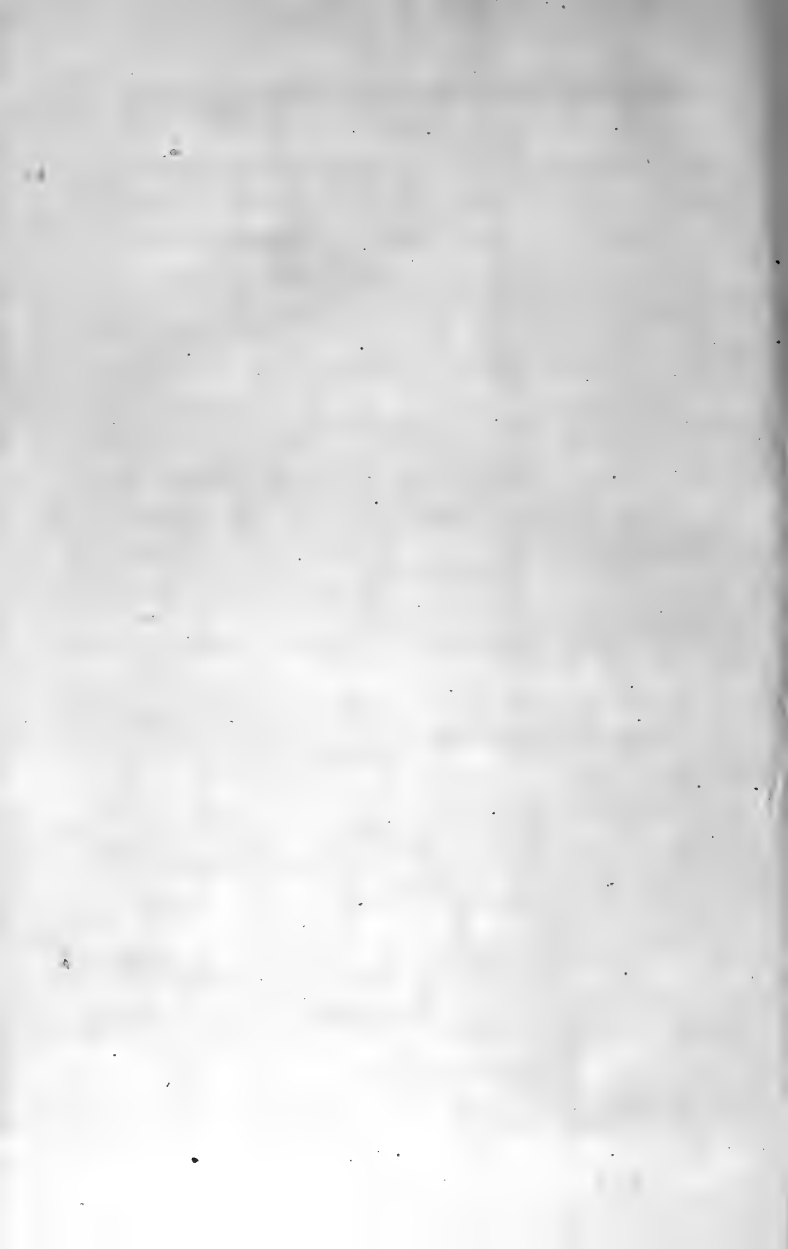
GRAPES.—When the grapes are so sour as to set one's teeth on edge, they should be stewed and sweetened. But good, ripe, well-cultivated Isabellas and Catawbas are incomparably superior in dietetic character, without "the interference of our art." What a blessing it would be to the human race if all the vineyards in the world were made to supply wholesome food for children, instead of pernicious poison for adults!

PINEAPPLE.—The only way of preparing this fruit, which, like some others, has more flavor than taste, is that of paring, slicing, and sprinkling with sugar.

TOMATOES.—Scald the tomatoes by pouring boiling water on them; peel off the skins; then stew them for an hour, and add a little slightly toasted bread. This is an excellent sauce for hydropathic tables; and the fruit may be improved in flavor by stewing half an hour, or even an hour longer.









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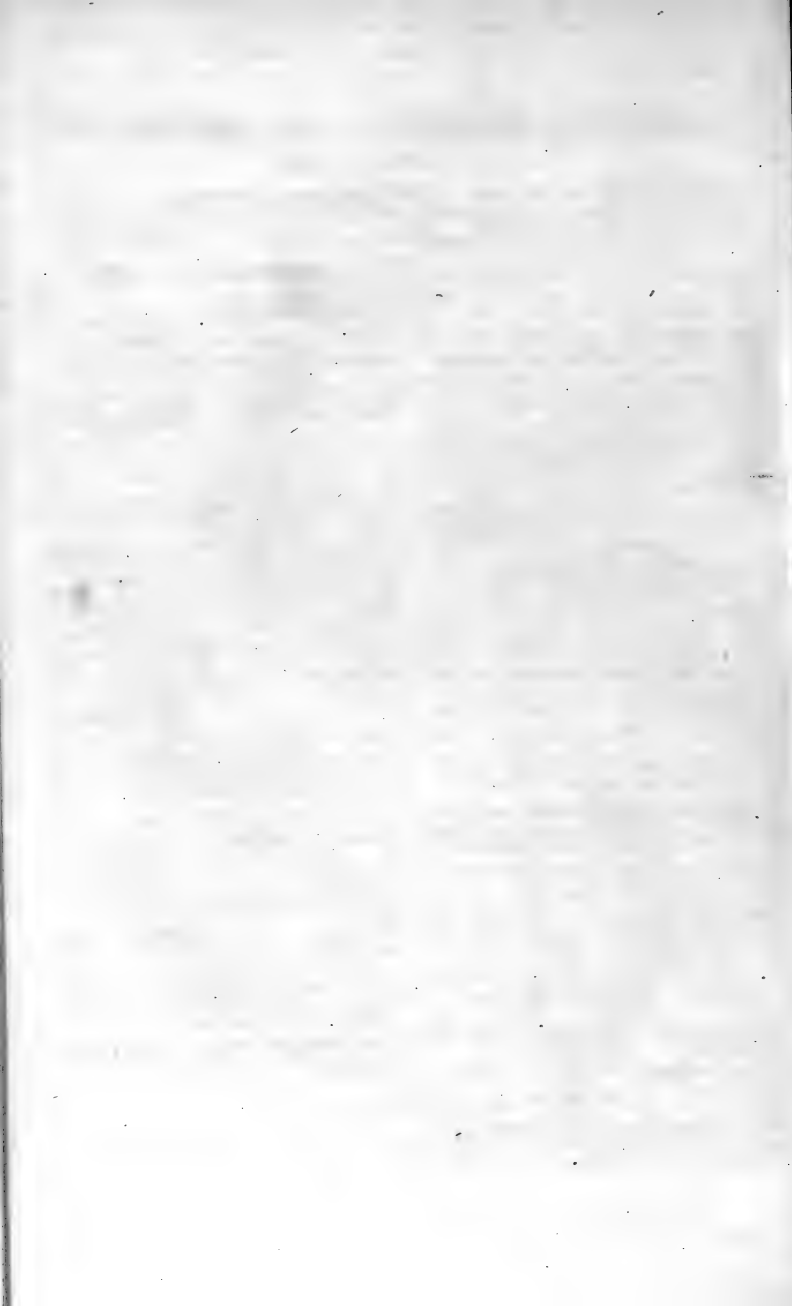
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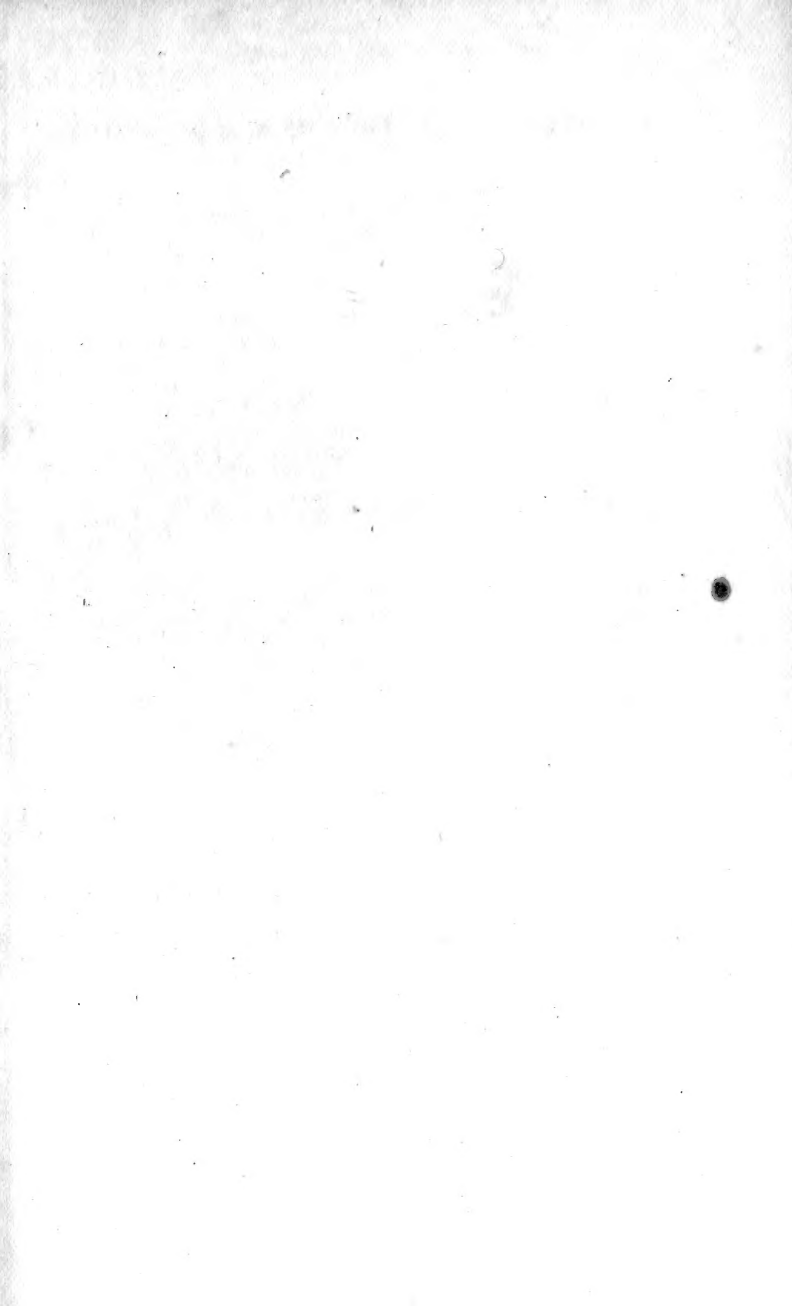
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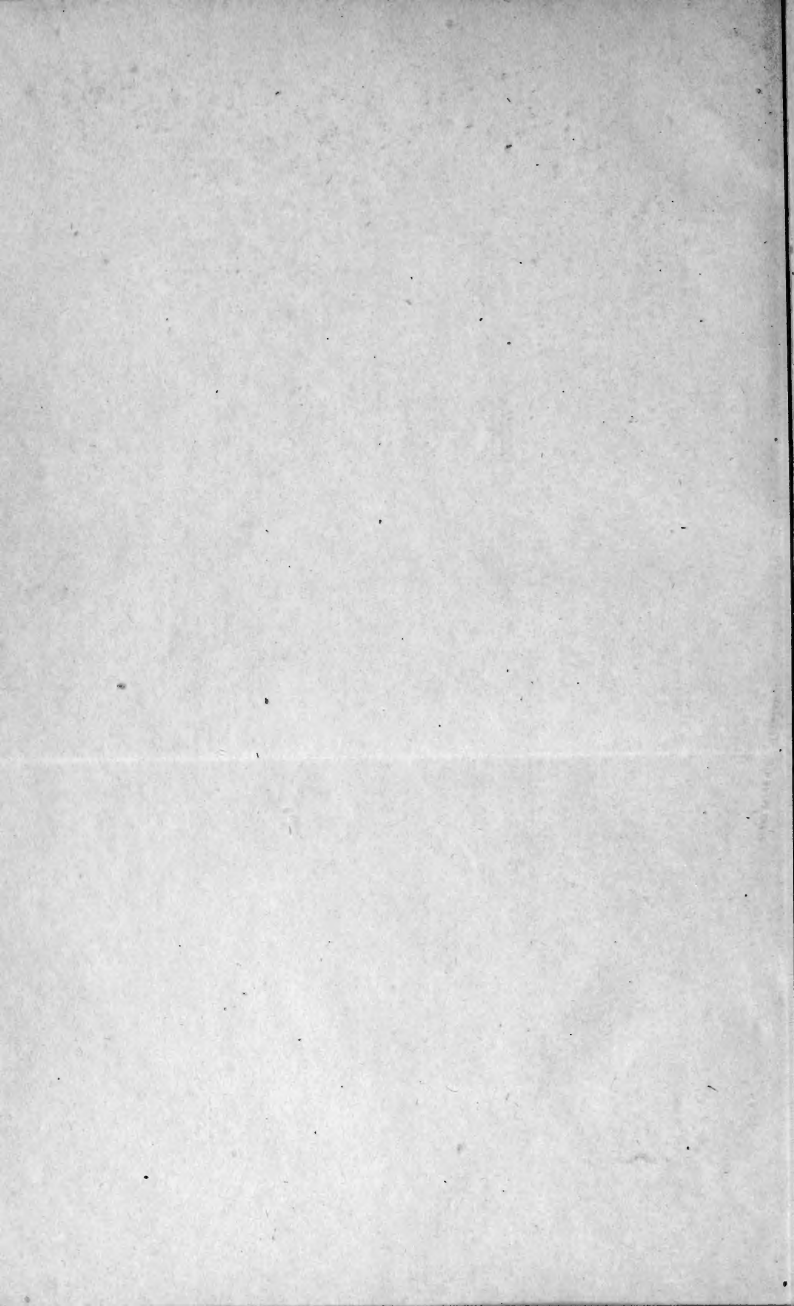
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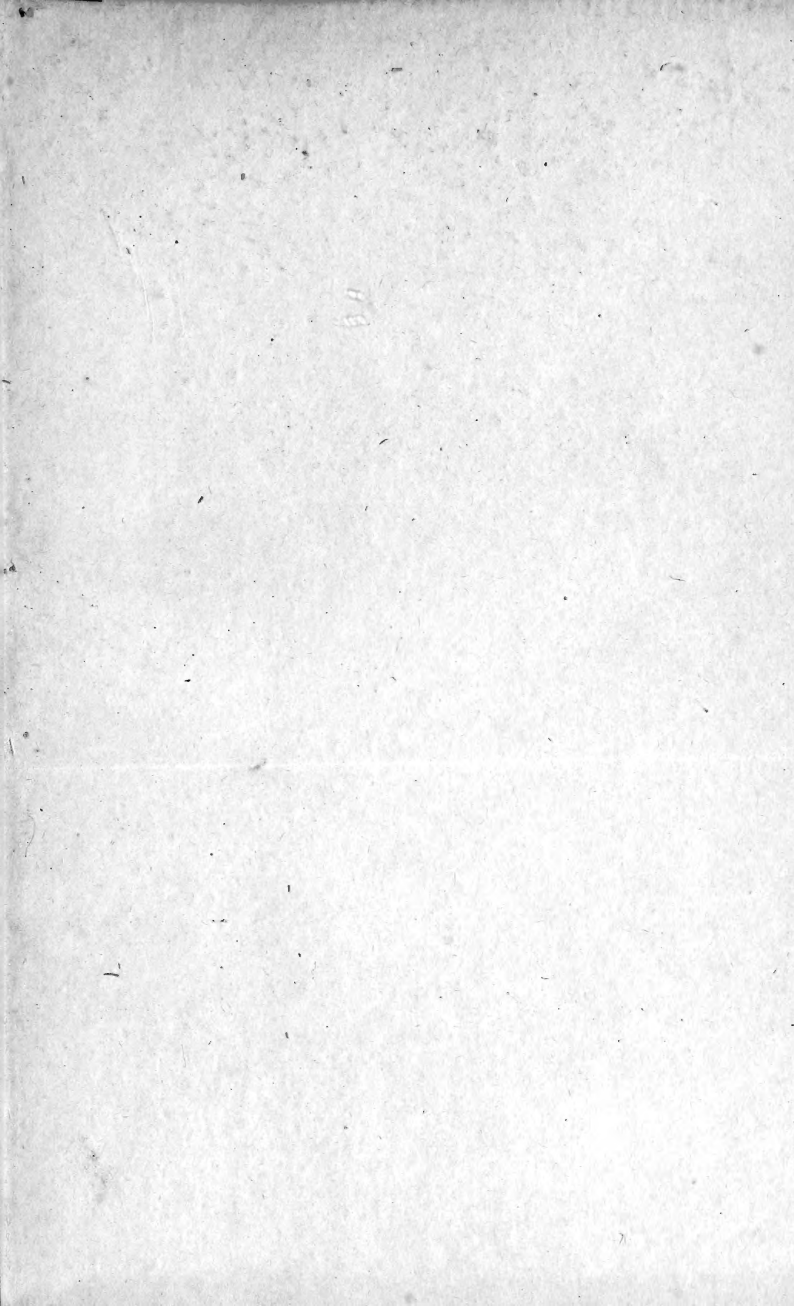
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